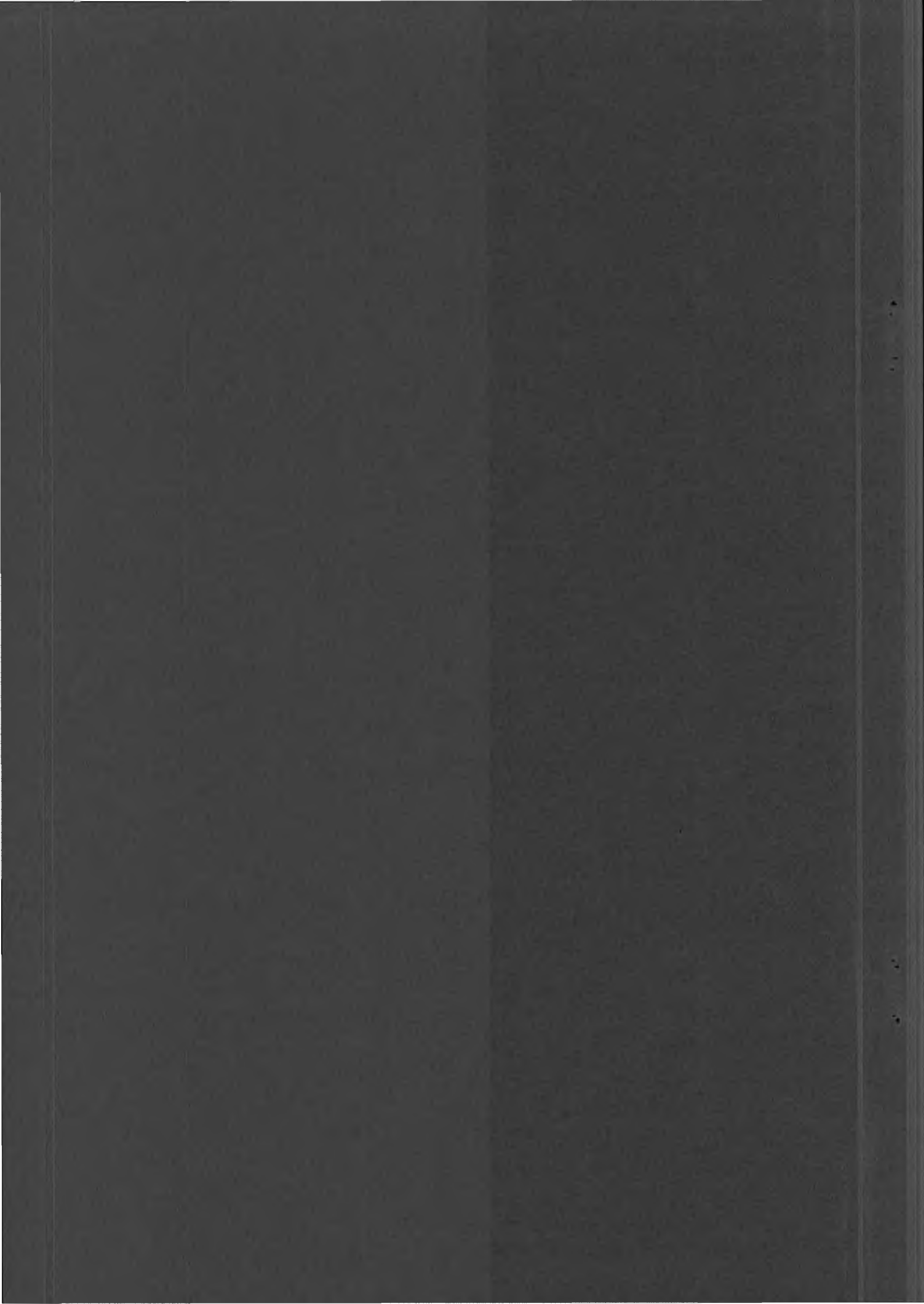


ANNEX A

ERS-1 ALT.RAW PRODUCT

CCT FORMAT

EARTHNET PROGRAMME OFFICE



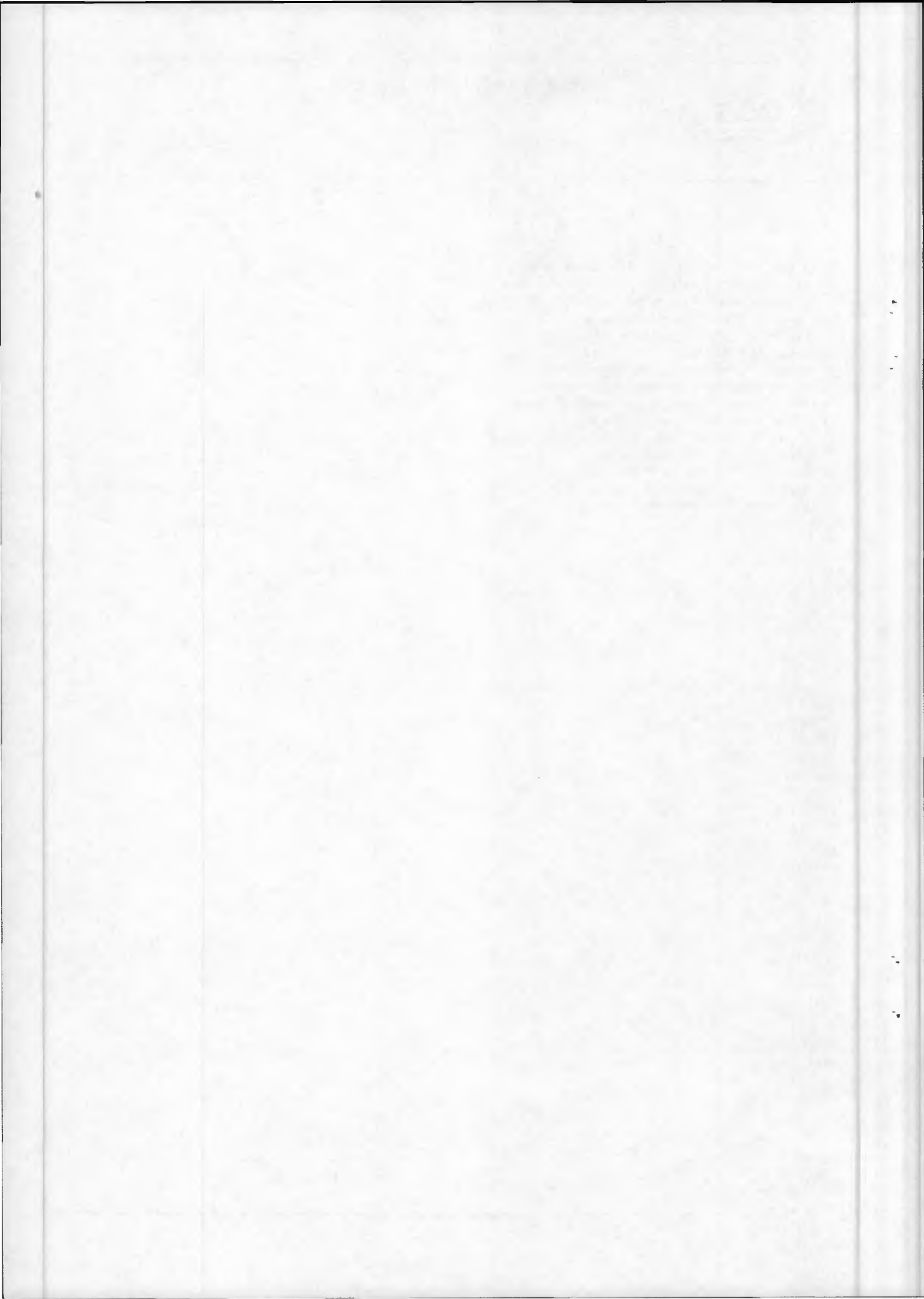


# EARTHNET ERS-1

ERS-1.ALT.RAW  
CCT FORMAT

er-is-epo-gs-0503.1  
is/rev 1/0  
10 April 1992

1		
2	Introduction . . . . .	1
3	Volume Directory File File Descriptor Record . . . . .	5
4	Volume Directory File Leader File Pointer Record . . . . .	6
5	Volume Directory File Data File Pointer Record . . . . .	7
6	Leader File File Descriptor Record . . . . .	8
7	Leader File ALT.RAW Catalogue Record . . . . .	10
8	Leader File Preliminary Orbit Record . . . . .	11
9	Leader File Restituted MNCC Orbit Record . . . . .	12
10	Leader File OBOG Time Correlation Record . . . . .	12
11	Leader File Altimeter Sensor Parameter Record . . . . .	13
12	Leader File Gravity Center Format . . . . .	13
13	Leader File Ultra Stable Oscillator Drift Record . . . . .	15
14	Leader File Attitude Data Record . . . . .	15
15	Data File File Descriptor Record . . . . .	16
16	Data File ALT.RAW Data Record . . . . .	18
17	Null Volume File Descriptor Record . . . . .	20



**Altimeter Raw Data Product**Acronym: **ALT.RAW**

This product provides the user with annotated uncorrected altimeter measures ,sensor parameters and sensor characteristics.

**1) General CCT structure**

The CCT contains the following four files :

Volume Directory File          Leader File

Data Set file                  Null Volume File

**2) Files description****a) Volume Directory File:**

volume descriptor record	360 bytes (mandatory)
leader file pointer record	360 bytes (mandatory)
data set file pointer record	360 bytes (mandatory)

**b) Leader File:**

file descriptor record	360 bytes (mandatory)
ALT.RAW catalogue record(s)	1240 bytes (mandatory)
Orbit Record(s) (MMCC or Preliminary Restituted orbit)	(mandatory)
OBOG time correlation	260 bytes (mandatory)
Sensor Parameters Record	(mandatory)
Attitude Record	(optional)

**c) Data Set File:**

file descriptor record	360 bytes (mandatory)
data records	1180 bytes (mandatory)

**d) Null Volume File:**

volume descriptor record	360 bytes (mandatory)
--------------------------	-----------------------

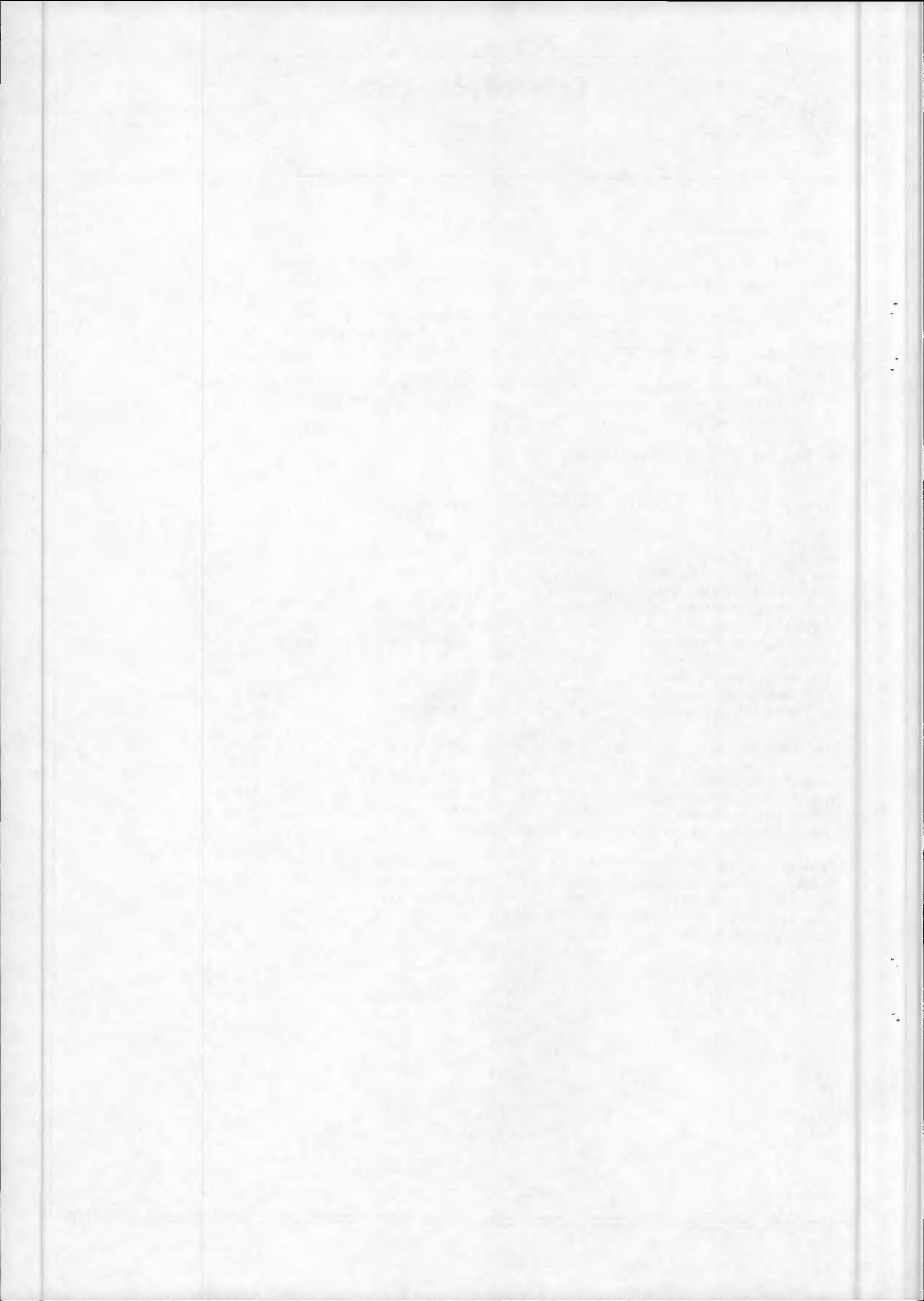


**Notation conventions :**

- \$** - the use of the "\$" (dollar sign) in the documentation denotes a requirement for the blank character (ie. the ASCII or EBCDIC space character).
- (n)** - this expression is used to denote the contents of an integer binary field which will vary depending on the product type or data origin and will have to be supplied on the CCT by the facility generating the CCT.
- <.....>** - this expression is used to denote the contents of a field, which will vary depending on the product type or data origin and will have to be supplied on the CCT by the facility generating the CCT.
- <\$...\$>** - this expression is used to denote a blank field.

File Class	Class Code	Data Type
"8\$BIT\$ASCII\$ONLY\$"	"ASCO"	ASCII only data
"EBCDIC\$ONLY\$"	"EBCO"	EBCDIC only
"BCD\$ONLY\$"	"BCDO"	BCD only
"BINARY\$ONLY\$"	"BINO"	binary only data
"MIXED\$BINARY\$AND\$ASCII\$\$\$\$\$\$\$\$"	"MBAA"	binary & ASCII
"MIXED\$BINARY\$AND\$EBCDIC\$\$\$\$\$\$\$\$"	"MBAE"	binary & EBCDIC
"MIXED\$BINARY\$AND\$BCD\$\$\$\$\$\$\$\$"	"MBAB"	binary & BCD
"UNDEFINED,ETC. \$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$"	"UNDF"	undefined
"COMPLEX\$"	"COMP"	complex
"REAL\$"	"REAL"	floating point

Data Interpretation	Format	Length
"INTEGER*1\$"	"I*1\$"	(1 byte wide)
"INTEGER*2\$"	"I*2\$"	(2 byte wide)
"INTEGER*4\$"	"I*4\$"	(4 byte wide)
- one, two and four byte two's complement integer representation		
"SIGNED\$INTEGER*1\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$"	"IS1\$"	(1 byte wide)
"SIGNED\$INTEGER*2\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$"	"IS2\$"	(2 byte wide)
"SIGNED\$INTEGER*4\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$"	"IS4\$"	(4 byte wide)
- one, two and four byte signed integer with the most significant bit used to denote sign		





"UNSIGNED\$INTEGER\*1\$" (1 byte wide)  
 "UNSIGNED\$INTEGER\*2\$" (2 byte wide)  
 "UNSIGNED\$INTEGER\*4\$" (4 byte wide)  
 - one, two and four byte unsigned integer with the most significant bit used as part of the pixel value, the pixel is always positive.

"REAL\*2\$" (2 byte wide)  
 "REAL\*4\$" (4 byte wide)  
 "REAL\*8\$" (8 byte wide)  
 - two, four and eight byte two's complement floating point representation with the exponent denoted in two's complement binary. (note that the REAL\*8 representation is the same as double precision.)

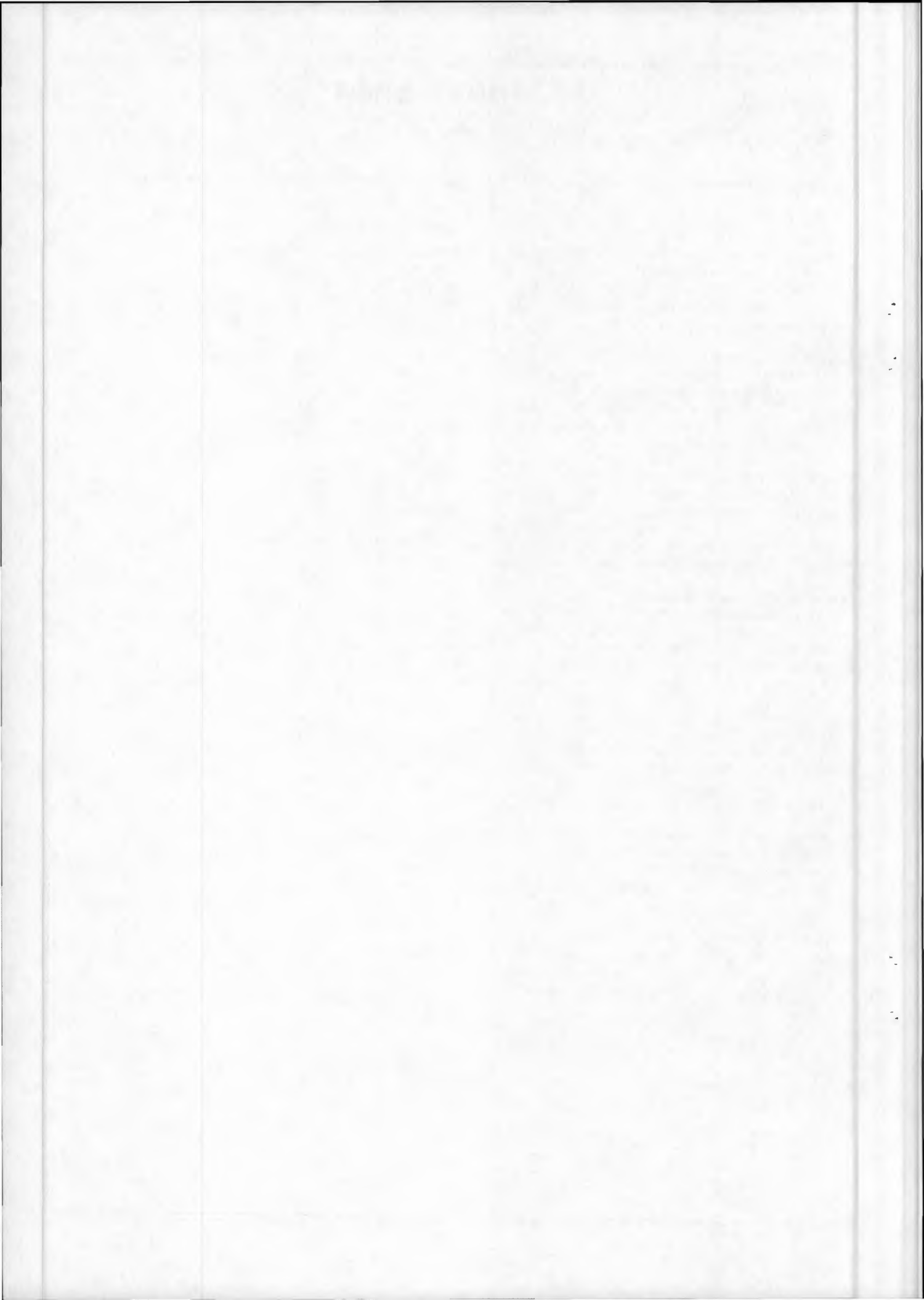
"REAL\*2\$HEXADECFMAL\$" (2 byte wide)  
 "REAL\*4\$HEXADECFMAL\$" (4 byte wide)  
 "REAL\*8\$HEXADECFMAL\$" (8 byte wide)  
 - two, four eight byte hexadecimal floating point representation with the exponent denoted as a hexadecimal exponent. (note that the REAL\*8. representation is the same as double precision.)

"COMPLEX\*4\$" (4 byte wide)  
 "COMPLEX\*8\$" (8 byte wide)  
 - four byte field with the first half (two bytes) containing the two's complement floating point representation value of the real component and the second half containing the imaginary component. Similarly for the eight byte type, with each half of the field containing the real and imaginary pairs.

"COMPLEX\$INTEGER\*2\$" (2 byte wide)  
 "COMPLEX\$INTEGER\*4\$" (4 byte wide)  
 "COMPLEX\$INTEGER\*8\$" (8 byte wide)  
 - similar to the complex floating point representation above except that each component is stored as a two's complement integer.

"COMPLEX\$SIGNED\$INTEGER\*2\$" (2 byte wide)  
 "COMPLEX\$SIGNED\$INTEGER\*4\$" (4 byte wide)  
 "COMPLEX\$SIGNED\$INTEGER\*8\$" (8 byte wide)  
 - similar to the complex floating point representation above except that each component is stored as a signed integer.

"COMPLEX\*4\$HEXADECFMAL\$" (4 byte wide)  
 "COMPLEX\*8\$HEXADECFMAL\$" (8 byte wide)  
 - same as the floating point complex notation above except that the representation follows the hexadecimal conventions.



**Records in products**

**CEOS Codes**

Volume Directory File

- VOLUME DESCRIPTOR RECORD (192,192,18,18)
- FILE POINTER RECORD (219,192,18,18)

Leader File

- FILE DESCRIPTOR RECORD (63,192,18,18)
- ALT.RAW CATALOGUE (10,12,36,50)

one of the two following records

- MMCC ORBIT (10,31,36,50)
- PRELIMINARY RESTITUTED ORBIT (10,32,36,50)
- OBOG TIME CORRELATION RECORD (10,150,36,50)
- ALTIMETER SENSOR PARAMETER RECORD (10,100,36,50)
- ATTITUDE DATA RECORD (10,42,36,50)

ALT Data File

- FILE DESCRIPTOR RECORD (63,192,18,18)
- PROCESSED DATA RECORD (70,12,36,50)

Null Volume

- NULL VOLUME DESCRIPTOR RECORD (192,192,63,18)

**Note:**

Fields not provided are filled with blanks or meaningless values as  
 -9999999.9999999 in case, for instance, of fields whose format is F16.7.

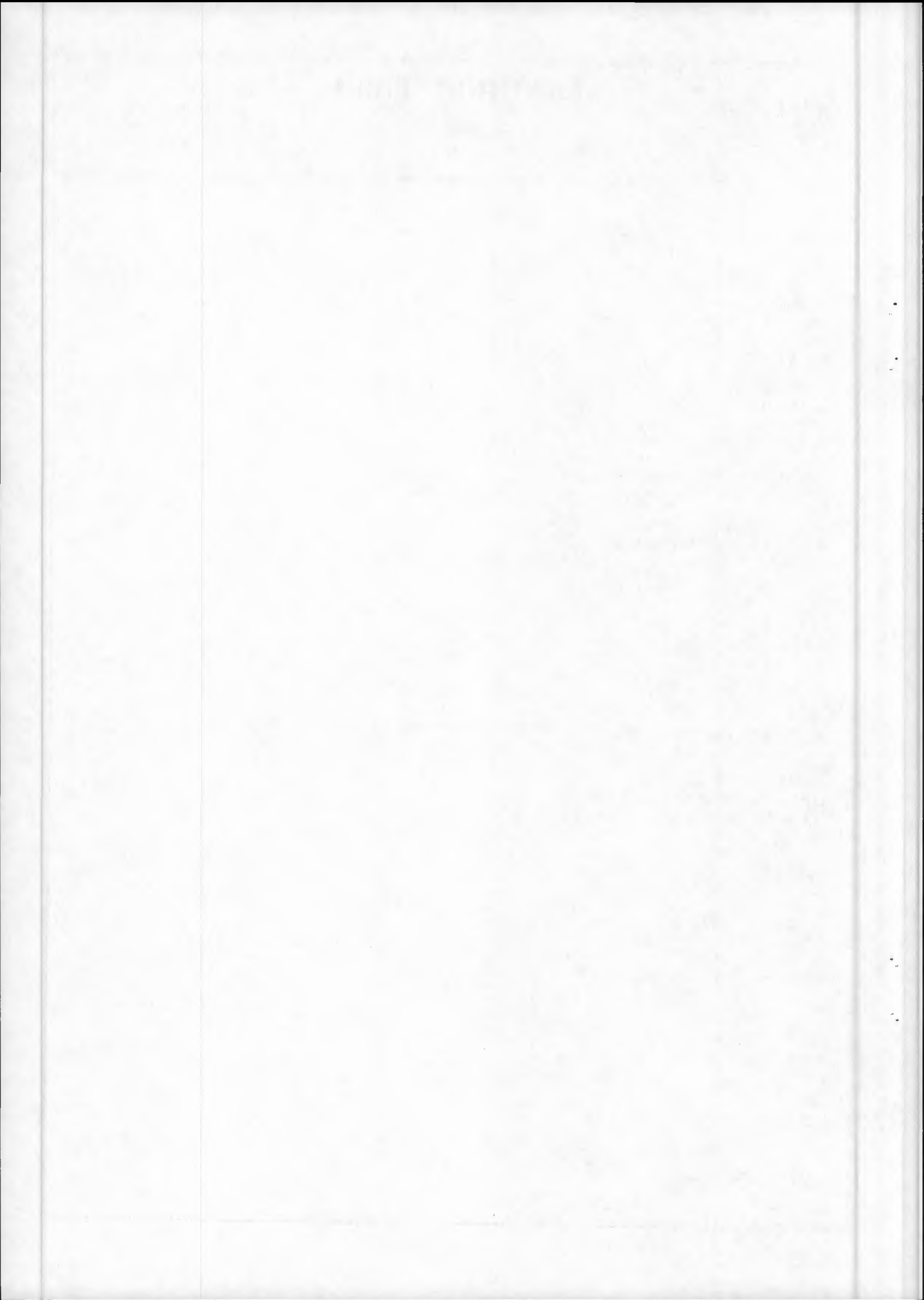


TABLE 2.1 VOLUME DESCRIPTOR RECORD

FIELD	BYTES	FORMAT	DESCRIPTION	CONTENT
1	1-4	B4	Record sequence number	(1)
2	5	B1	1-st record subtype code	(192)
3	6	B1	Record type code	(192)
4	7	B1	2-nd subtype code	(18)
5	8	B1	3-rd subtype code	(18)
6	9-12	B4	Length of this record	(360)
7	13-14	A2	ASCII/EBCDIC flag	AS
8	15-16	A2	blanks	SS
9	17-28	A12	format control document	CCB-CCT-0002
10	29-30	A2	Superstructure format control document	AS
11	31-32	A2	Superstructure record format revision	AS
12	33-44	A12	Logical volume generating facility software release and revision level	<software.id.>
13	45-60	A16	ID of physical volume containing this volume descriptor	<physical.tape.id.>
14	61-76	A16	Logical volume identifier	<logical.set.id.>
15	77-92	A16	Volume set identifier ( product generation date) (YYYYMMDDhhmmssdd, dd=deci-secs)	<volume.set.id.>
16	93-94	I2	Total number of physical volumes in the logical volume	\$1
17	95-96	I2	Physical volume sequence number of the first tape within the logical volume	\$1
18	97-98	I2	Physical volume sequence number of the last tape within the logical volume	\$1
19	99-100	I2	Physical volume sequence number of the current tape within the logical volume	\$1
20	101-101	I4	First referenced file number in this physical volume within the logical volume.	\$\$\$1
21	105-108	I4	Logical volume within a volume set	\$\$\$1
22	109-112	I4	Logical volume number within physical volume	\$\$\$1
23	113-120	A8	Logical volume creation date (YYYYMMDD)	<YYYYMMDD>
24	121-128	A8	Logical volume creation time (hhmmssdd, dd=deci-seconds)	<hhmmssdd>
25	129-140	A12	Logical volume generation country	<country..>
26	141-148	A8	Logical volume generating agency	<agency..>
27	149-160	A12	Logical volume generating facility	<facility..>
28	161-164	I4	Number of file pointer records in volume directory	\$\$\$2
29	165-168	I4	Number of records in volume directory	\$\$\$3
30	169-260	A92	Volume descriptor spare segment (always blank filled)	(blanks)
31	261-360	A100	Local use segment	(blanks)

1881

TABLE 2.2 LEADER FILE POINTER RECORD

FIELD	BYTES	FORMAT	DESCRIPTION	CONTENT
1	1-4	B4	Record number	(2)
2	5	B1	1-st record subtype code	(219)
3	6	B1	record type code	(192)
4	7	B1	2-nd subtype code	(18)
5	8	B1	3-rd subtype code	(18)
6	9-12	B4	Length of this record	(360)
7	13-14	A2	ASCII/EBCDIC flag for referenced file	AS
8	15-16	A2	blank	\$\$
9	17-20	I4	Referenced file number	\$\$\$1
10	21-36	A16	Referenced file name	ERS1.ALT.RAWLEAD
11	37-64	A28	Referenced file class	ALTLEADER\$FILE\$\$\$\$\$
12	65-68	A4	Referenced file class code	ALTL
13	69-96	A28	Referenced file data type	MIXED\$BINARY\$AND\$ASC
14	97-100	A4	Referenced file data type code	MBAA
15	101-108	I8	Number of records in referenced file	<nnnnnnnn>
16	109-116	I8	Referenced file 1-st record length	\$\$\$\$\$360
17	117-124	I8	Referenced file maximum record length	<nnnnnnnn>
18	125-136	A12	Referenced file record length type	VARIABLE\$LEN
19	137-140	A4	Referenced file record length type code	VARE
20	141-142	I2	Referenced file physical volume start number	\$1
21	143-144	I2	Referenced file physical volume end number	\$1
22	145-152	I8	Referenced file portion start, 1-st record number for this physical volume	\$\$\$\$\$\$1
23	153-160	I8	Referenced file portion end, last record number for this physical volume	<nnnnnnnn>
24	161-260	A100	File pointer spare segment	(blanks)
25	261-360	A100	Local use segment	(blanks)





TABLE 2.3 DATA FILE POINTER RECORD

FIELD	BYTES	FORMAT	DESCRIPTION	CONTENT
1	1-4	B4	Record number	(3)
2	5	B1	1-st record subtype code	(219)
3	6	B1	record type code	(192)
4	7	B1	2-nd subtype code	(18)
5	8	B1	3-rd subtype code	(18)
6	9-12	B4	Length of this record	(360)
7	13-14	A2	ASCII/EBCDIC flag for referenced file	AS
8	15-16	A2	blank	\$\$
9	17-20	I4	Referenced file number	\$\$\$2
10	21-36	A16	Referenced file name	ERS1.ALT.RAWDTP
11	37-64	A28	Referenced file class	DATATYPE\$OPTION\$FILE
12	65-68	A4	Referenced file class code	DTOP
13	69-96	A28	Referenced file data type	MIXED\$BINARY\$AND\$ASCII
14	97-100	A4	Referenced file data type code	MBAA
15	101-108	I8	Number of records in referenced file	<nnnnnnnn>
16	109-116	I8	Referenced file 1-st record length	\$\$\$\$\$360
17	117-124	I8	Referenced file maximum record length	\$\$\$\$\$3156
18	125-136	A12	Referenced file record length type	VARIASLENGTH
19	137-140	A4	Referenced file record length type code	VARI
20	141-142	I2	Referenced file physical volume start number	\$1
21	143-144	I2	Referenced file physical volume end number	\$1
22	145-152	I8	Referenced file portion start, 1-st record number for this physical volume	<\$\$\$\$\$\$\$1>
23	153-160	I8	Referenced file portion end, last record number for this physical volume	<nnnnnnnn>
24	161-260	A100	File pointer spare segment	(blanks)
25	261-360	A100	Local use segment	(blanks)

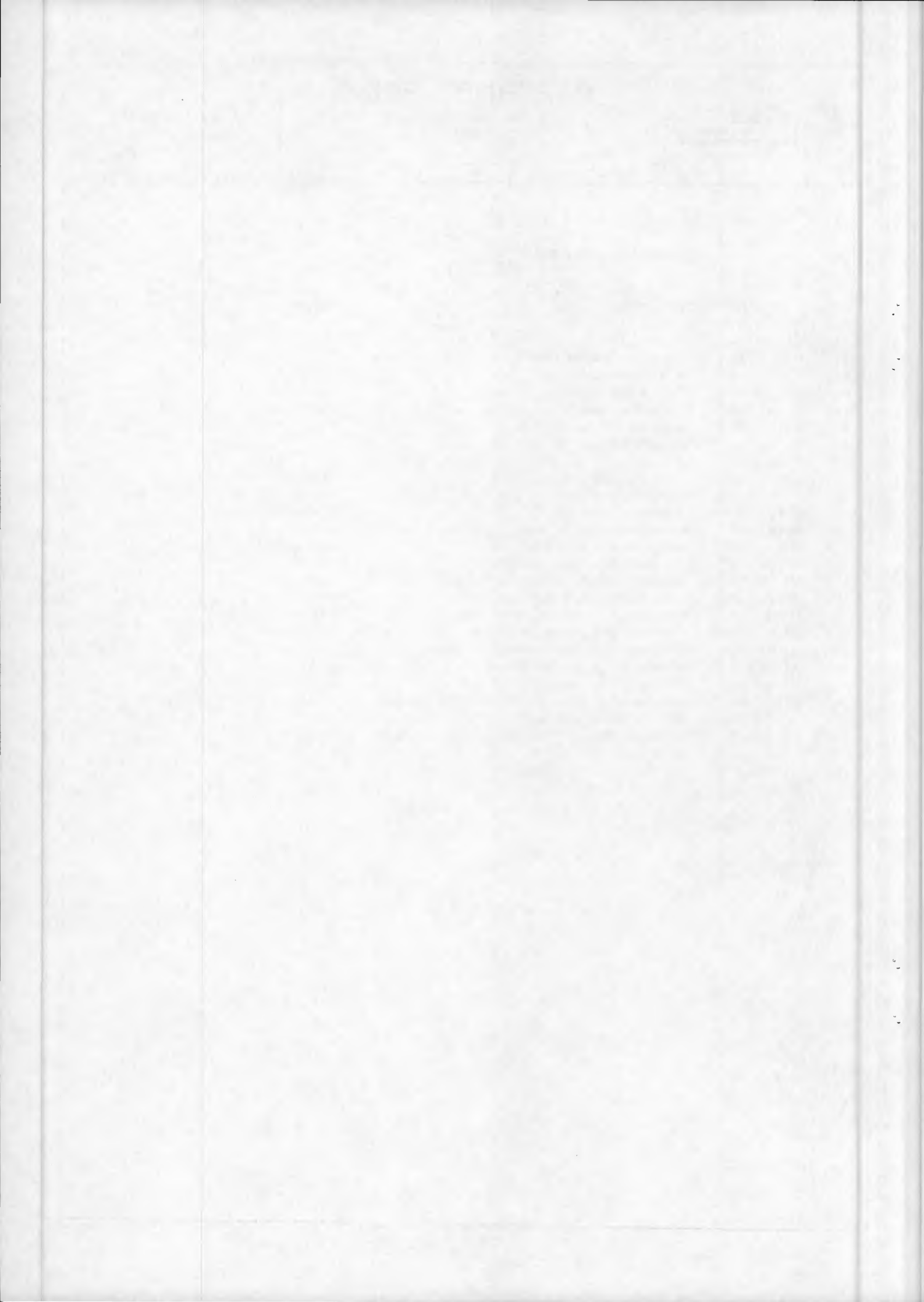


TABLE 3.1 ALTLEADER FILE - FILE DESCRIPTOR RECORD  
(FIXED SEGMENT) DEFINITION

FIELD	BYTES	FORMAT	DESCRIPTION AND/OR CONTENT	CONTENT
1	1-4	B4	Record sequence number	(1)
2	5	B1	1-st record sub-type code	(63)
3	6	B1	Record type code	(192)
4	7	B1	2-nd record sub-type code	(18)
5	8	B1	3-rd record sub-type code	(18)
6	9-12	B4	Length of this record	(360)
7	13-14	A2	ASCII/EBCDIC flag	SA
8	15-16	A2	blanks	SS
9	17-28	A12	Format control document ID for this data file format	ERS1-ALT-CCT
10	29-30	A2	Format control document revision level	SA
11	31-32	A2	File design descriptor revision letter	SA
12	33-44	A12	Generating software release and revision level	<software.id.>
13	45-48	I4	File number	\$\$\$1
14	49-64	A16	File name	ERS1.ALT.RAWLEAD
15	65-68	A4	Record sequence and location type flag	FSEQ
16	69-76	I8	Sequence number location	\$\$\$\$\$\$\$1
17	77-80	I4	Sequence number field length	\$\$\$4
18	81-84	A4	Record code and location type flag	FTYP
19	85-92	I8	Record code location	\$\$\$\$\$\$\$5
20	93-96	I4	Record code field length	\$\$\$4
21	97-100	A4	Record length and location type flag	FLGT
22	101-108	I8	Record length location	\$\$\$\$\$\$\$9
23	109-112	I4	Record length field length	\$\$\$4
24	113	A1	Reserved	blank
25	114	A1	Reserved	blank
26	115	A1	Reserved	blank
27	116	A1	Reserved	blank
28	117-180	A64	Reserved segment	blank

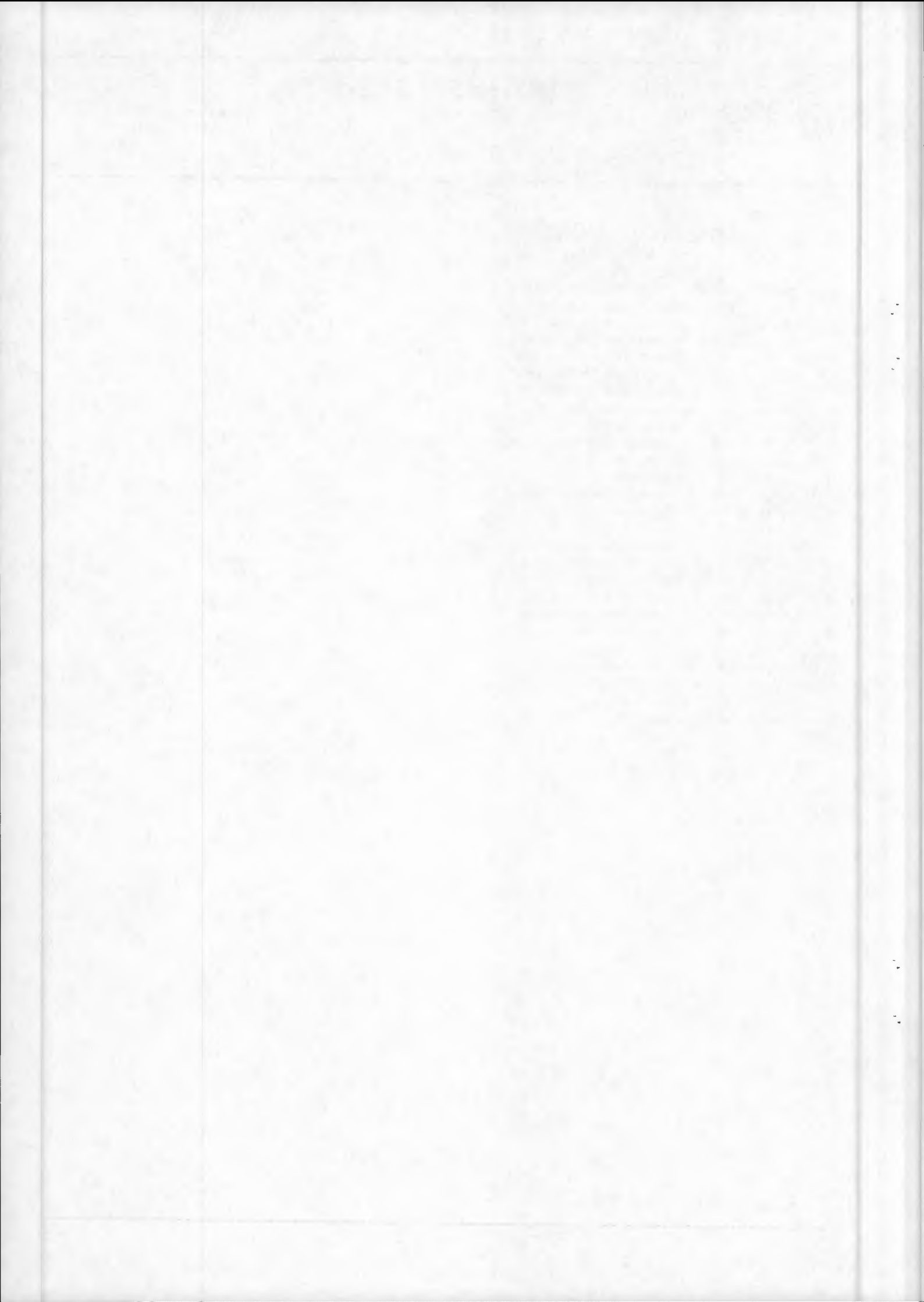


TABLE 3.1 ALTLEADER FILE - FILE DESCRIPTOR RECORD (Cont'd)  
 (VARIABLE SEGMENT) DEFINITION

FIELD	BYTES	FORMAT	DESCRIPTION	
29	181-186	I6	number of catalogue records	<nnnnnn>
30	187-192	I6	length of above records	\$\$1240
31	193-198	I6	reserved	
32	199-204	I6	reserved	
33	205-210	I6	number of platform pos. data records	<nnnnnn>
34	211-216	I6	length of above records	<nnnnnn>
35	217-222	I6	number of attitude data records	<nnnnnn>
36	223-228	I6	length of above records	<nnnnnn>
37	229-234	I6	reserved	
38	235-240	I6	reserved	
39	241-246	I6	number of OBOG Time correlation records	\$\$\$\$\$1
40	247-252	I6	length of above records	\$\$\$260
41	253-258	I6	reserved	
42	259-264	I6	reserved	
43	265-270	I6	number of sensor parameters data records	<nnnnnn>
44	271-276	I6	length of above records	<nnnnnn>
45	277-282	I6	spare	
46	283-288	I6	spare	
47	289-294	I6	spare	
48	295-300	I6	spare	
49	301-306	I6	spare	
50	307-312	I6	spare	
51	313-318	I6	spare	
52	319-324	I6	spare	
53	325-330	I6	spare	
54	331-336	I6	spare	
55	337-342	I6	spare	
56	343-348	I6	spare	
57	349-354	I6	spare	
58	355-360	I6	spare	

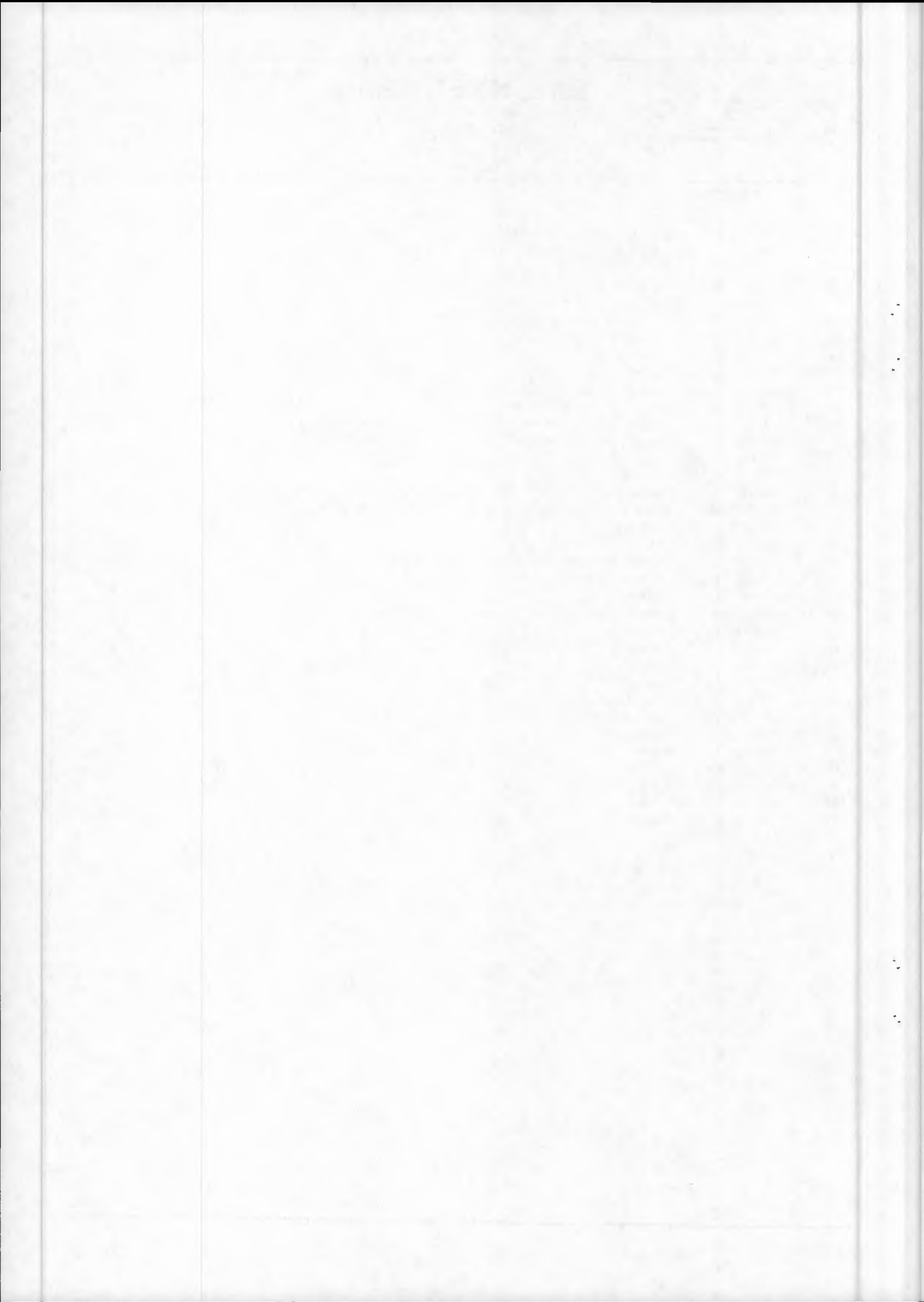


Table 3.2 ALTIMETER RAW DATA - CATALOGUE RECORD DEFINITION

FIELD	BYTES	FORMAT	DESCRIPTION AND/OR CONTENTS
1	1-4	B4	record sequence Number
2	5	B1	File Code (10)
3	6	B1	Record Code (10)
4	7	B1	Mission Code (36)
5	8	B1	Origin Code (50)
6	9-12	B4	Record Length (1240)
7	13-16	14	Second Sequence Number incremented at each record, updated to 1 every time the type changes
8	17-20	14	Number of catalogue sub-record in the record = 10 maxi
9	21-30	F10.4	Dataset Ident = revolution nb. frame nb. The revolution number corresponds to an absolute orbit number, since mission start, incremented at the ascending node. The frame number is varying from 0 at ascending node to 7199 each 0.05 deg of the sub-satellite track.
10	31	I1	Raw data Quality Indicator from 0 (best quality) to 9 (worst quality)
11	32-34	I3	Number of Source Packets
12	35-37	I3	Number of Ocean Source Packets
13	38	I1	Sea/Land Indicator (0 = Land only, 1 = Other)
14	39	I1	Open Loop Calibration Indicator 0 = not open loop calibration 1 = Open loop calibration in tracking Ocean mode 2 = Open loop calibration in tracking Ice mode 3 = Open loop calibration in tracking Ocean and Ice modes
15	40-45	F6.2	Start Latitude in degree. A negative value denotes South latitude and a positive value denotes North latitude
16	46-51	F6.2	Start Longitude in degree (i.e. 0.00 - 360.00 from Greenwich to East)
17	52-57	F6.2	End Latitude
18	58-63	F6.2	End Longitude
19	64-66	I3	Orbital Cycle number
20	67	A1	Orbital sense, A = Ascending, D = Descending
21	68-71	14	Orbit number in the cycle varying from 1 to 43 for the 3 days repeat cycle
22	72-76	I5	Revolution number
23	77-96	A20	Start Date (DD/MON/YYYY-HH:MI:SS)
24	97-116	A20	End Date (DD/MON/YYYY-HH:MI:SS)
25	117-118	A2	Station Identifier, GS = Gatineau, KS = Kiruna, MS = Mas Palomas, FS = Fucino
26	119-138	A20	Acquisition date at CERSAT (DD/MON/YYYY-HH:MI:SS)
27	139-142	F4.1	CERSAT Software version Number
2nd catalogue sub-record			
28	143-152	F10.4	Dataset ident ...etc





TABLE 3.3 PRELIMINARY ORBIT RECORD DEFINITION

FIELD	BYTES	FORMAT	DESCRIPTION
1	1-4	B4	Sequence number (n)
2	5	B1	File Code (10)
3	6	B1	Record Code (32)
4	7	B1	Mission Code (36)
5	8	B1	Origin Code (50)
6	9-12	B4	Record length
7	13-16	I4	2nd sequence number = 1 or 2
8	17-20	I4	Number of orbital points in record = 360 max
FIRST POINT			
9	21-26	A6	= 'STINER'
10	27-33	I7	Satellite ID (COSPAR No)
11	34	A1	Orbit type = 'V' (for preliminary)
12	35-40	F6.1	Julian days since 1.1.2000 12h in UTC
13	41-45	I5	Seconds of the days
14	46-51	I6	Microseconds
15	52-63	I12	X-Coordinate of satellite in mm
16	64-75	I12	Y-Coordinate of satellite in mm
17	76-87	I12	Z-Coordinate of satellite in mm
18	88-98	I11	X-Velocity of satellite in microm/sec
19	99-109	I11	Y-Velocity of satellite in microm/sec
20	110-120	I11	Z-Velocity of satellite in microm/sec
21	121-126	F6.3	Roll angle in 0.001 degrees
22	127-132	F6.3	Pitch angle in 0.001 degrees
23	133-138	F6.3	Yaw angle in 0.001 degrees
24	139-140	I2	Flag : 1 = first state vector (ascending arc) at or above the equator. 0 = otherwise
25	141-143	I3	Checksum of cols 21-120
26	144-150	A7	spare
27	151-156	A6	= 'STTERR'
28	157-163	I7	Satellite Id (Cospar No)
29	164	A1	Orbit type = V for preliminary
30	165-170	F6.1	Julian days since 1.1.2000 12h in UTC
31	171-175	I5	Seconds of the days
32	176-181	I6	Microseconds
33	182-193	I12	X-Coordinate of satellite in mm
34	194-205	I12	Y-Coordinate of satellite in mm
35	206-217	I12	Z-Coordinate of satellite in mm
36	218-228	I11	X-Velocity of satellite in microm/sec
37	229-239	I11	Y-Velocity of satellite in microm/sec
38	240-250	I11	Z-Velocity of satellite in microm/sec
39	251-256	F6.3	Roll angle in 0.001 degrees
40	257-262	F6.3	Pitch angle in 0.001 degrees
41	263-268	F6.3	Yaw angle in 0.001 degrees
42	269-270	I2	Flag : 1 = first state vector (ascending arc) at or above the equator.
43	271-273	I3	Checksum of cols 21-120
44	274-280	A7	spare
SECOND POINT			
45	281-...		

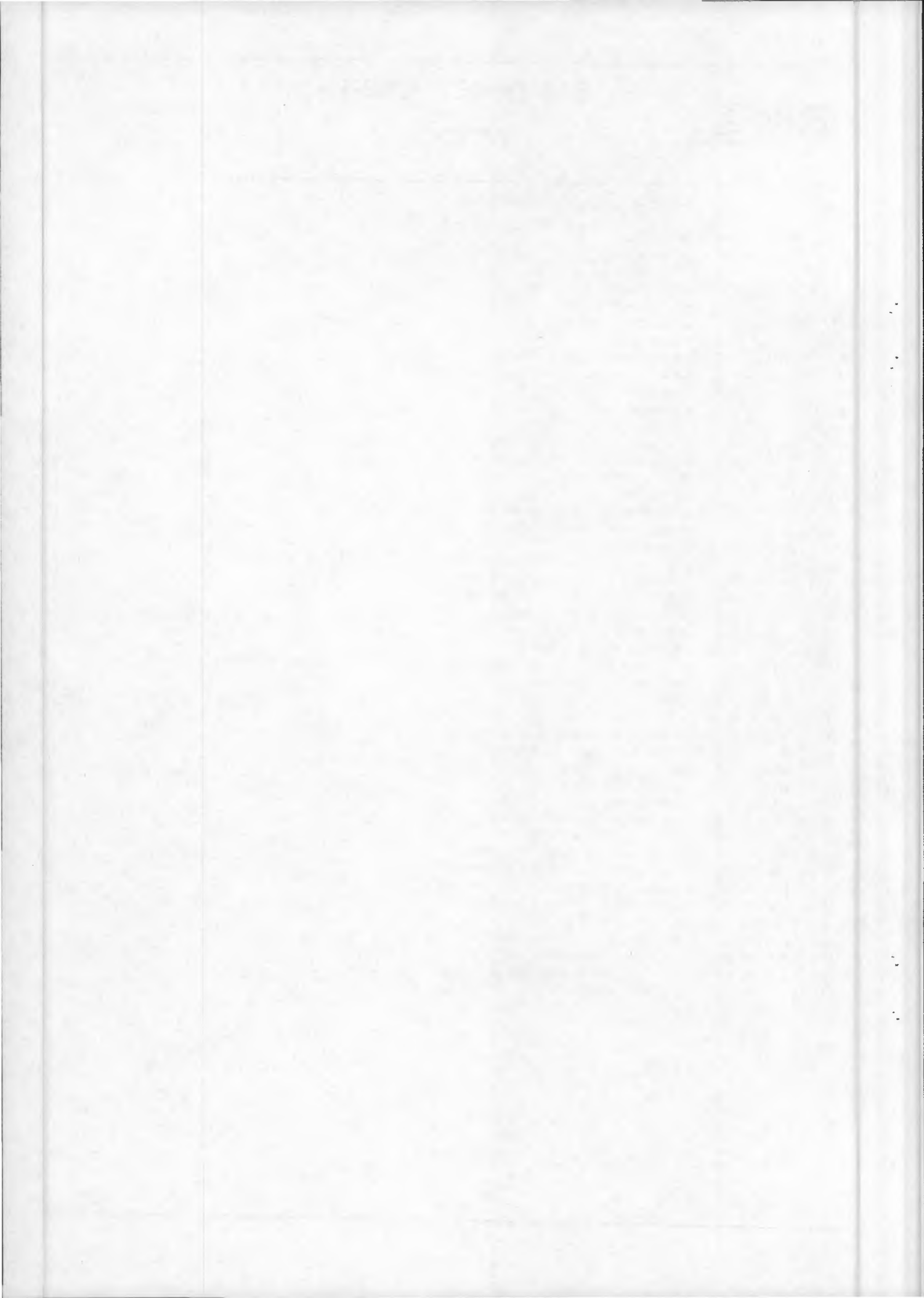


Table 3.4 RESTITUTED MMCC ORBIT RECORD DEFINITION

FIELD BYTES      FORMAT DESCRIPTION

1	1-4	B4	Sequence number	(n)
2	5	B1	File Code	(10)
3	6	B1	Record Code	(31)
4	7	B1	Mission Code	(36)
5	8	B1	Origin Code	(50)
6	9-12	B4	Record length	
7	13-16	I4	2nd sequence number	= 1 or 2
8	17-20	I4	Number of orbital points in the record	= 720 max

FIRST POINT

9	21-24	B4	Days since 1st January 1950
10	25-29	B4	Time in msec since midnight
11	30-33	B4	X Coordinate (in cm)
12	34-37	B4	Y Coordinate (in cm)
13	38-41	B4	Z Coordinate (in cm)
14	42-45	B4	X Velocity (10**-5m/sec)
15	46-49	B4	Y Velocity (10**-5m/sec)
16	50-53	B4	Z Velocity (10**-5m/sec)

SECOND POINT

17 54-XXX

Table 3.5 ON BOARD ON GROUND TIME CORRELATION RECORD DEFINITION

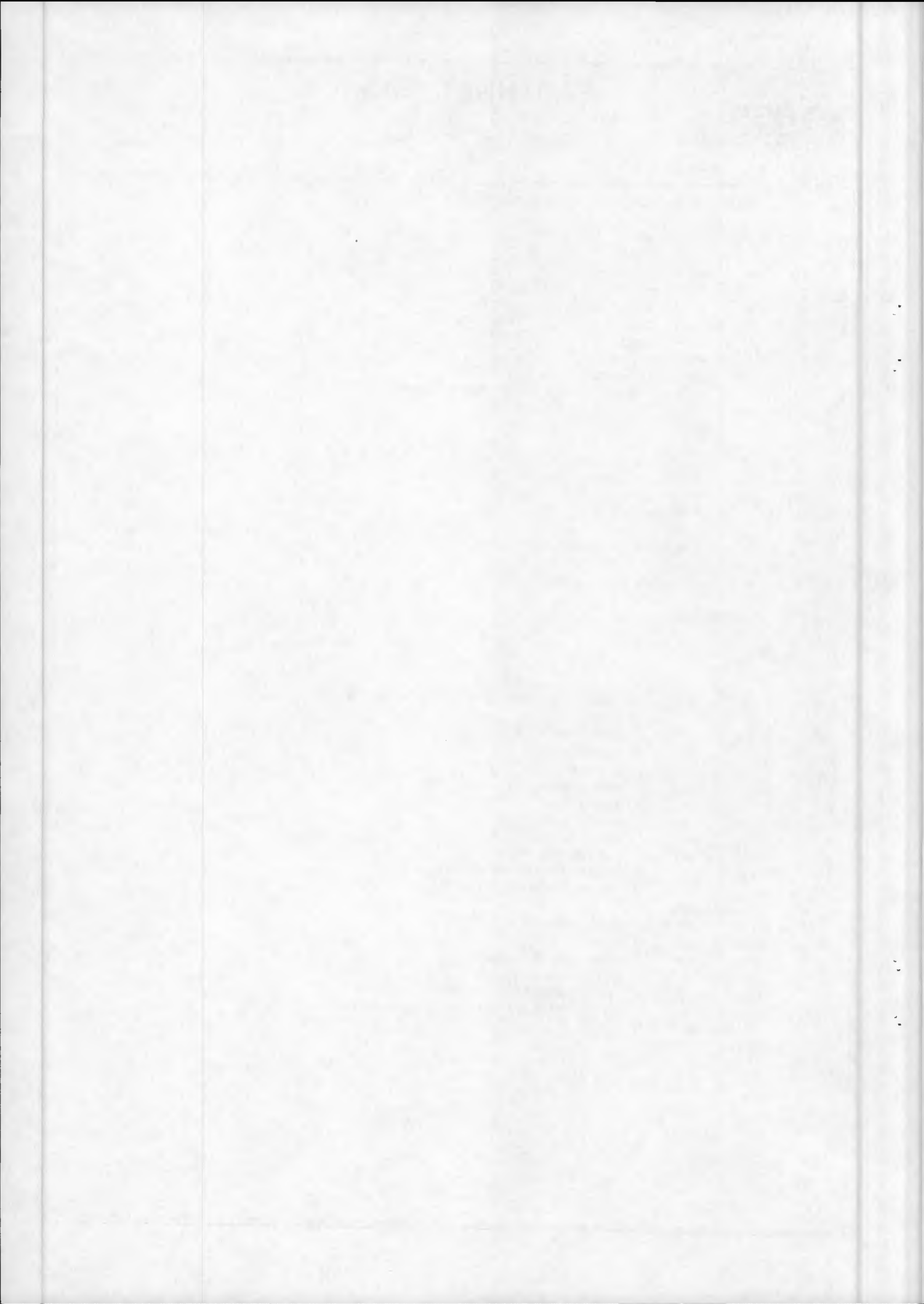
FIELD	BYTES	FORMAT	DESCRIPTION
1	1-4	B4	Sequence number (n)
2	5	B1	File Code (10)
3	6	B1	Record Code (150)
4	7	B1	Mission Code (36)
5	8	B1	Origin Code (50)
6	9-12	B4	Record length
7	13-16	I4	2nd sequence number = 1
8	17-20	I4	Number of relations per record = 10 maxi

1ST RELATION

9	21-25	I5	Orbit number
10	26-28	A3	spare
11	29-32	B4	Days since 1st January 1950
12	33-36	B4	Milliseconds
13	37-40	B4	Satellite Time Binary counter value
14	41-44	B4	Clock Period of satellite time counter (ns)

2TH RELATION

15 45-XXX



**TABLE 3.6 ALTIMETER SENSOR PARAMETERS RECORD DEFINITION**

FIELD	BYTES	FORMAT	PRESCRIPTION
1	1-4	B4	Sequence Number (n)
2	5	B1	File Code (10)
3	6	B1	Record Code (100)
4	7	B1	Mission Code (36)
5	8	B1	Origin Code (50)
6	9-12	B4	Record length
7	13-16	I4	2nd sequence number
8	17-20	I4	Number of sub-records
9	21-24	I4	Length of the sub-record
10	25-32	A8	Applicability date (YYYY/MM/DD)
11	33-36	I4	Number of parameters in the sub-record k times
12	37-64	A28	Parameter name
13	65-68	A4	Sensor identifier
14	69-72	I4	Number of values
15	73-76	I4	Rank of the first value (= 1 or 2 or 3..or.n) n times in the sub-record
16	y-y+15	I16	Parameter value Mantissa = 12 bytes, Exponent = 4 bytes
<b>GRAVITY CENTER</b>			
17	z-z+332		Gravity center (see table 3.6.1)
18	v-v+62		RA USO DRIFT (see table 3.6.2)

**TABLE 3.6.1 GRAVITY CENTER FORMAT**

FIELD	BYTES	FORMAT	DESCRIPTION
1	1	A1	blank
2	2-21	A20	= 'ERS-1 CENTRE OF MASS'
3	22	A1	blank
4	23-46	A24	Date and Time (DD- <del>MMM</del> -YYYY hh:mm:ss.sss)
5	47	A1	blank
6	48-63	A16	= 'CALCULATION DATE'
7	64	A1	blank
8	65-70	F6.3	XS coordinate
9	71	A1	blank
10	72-92	A21	= 'XS COORDINATE (METER)'
11	93	A1	blank
12	94-99	F6.3	YS coordinate
13	100	A1	blank
14	101-121	A21	= 'YS COORDINATE (METER)'
15	122	A1	blank
16	123-128	F6.3	ZS coordinate
17	129	A1	blank



TABLE	3.6.1	GRAVITY CENTER FORMAT (Cont'd)	
FIELD	BYTES	FORMAT	DESCRIPTION
18	130-150	A21	= 'ZS COORDINATE (METER)'
19	151	A1	blank
20	152-159	F8.3	Mass (Kg)
21	160	A1	blank
22	161-169	A9	= 'MASS (KG)'
23	170	A1	blank
24	171-176	F6.1	Inertia XX
25	177	A1	blank
26	178-195	A18	= 'INERTIA XX (M2.KG)'
27	196	A1	blank
28	197-202	F6.1	Inertia YY
29	203	A1	blank
30	204-221	A18	= 'INERTIA YY (M2.KG)'
31	222	A1	blank
32	223-228	F6.1	Inertia ZZ
33	229	A1	blank
34	230-247	A18	= 'INERTIA ZZ (M2.KG)'
35	248	A1	blank
36	249-254	F6.1	Inertia XY
37	255	A1	blank
38	256-273	A18	= 'INERTIA XY (M2.KG)'
39	274	A1	blank
40	275-280	F6.1	Inertia YZ
41	281	A1	blank
42	282-299	A18	= 'INERTIA YZ (M2.KG)'
43	300	A1	blank
44	301-306	F6.1	Inertia ZX
45	307	A1	blank
46	308-325	A18	= 'INERTIA ZX (M2.KG)'
47	326	A1	blank
48	327-333	A7	= 'EOF_BFX'

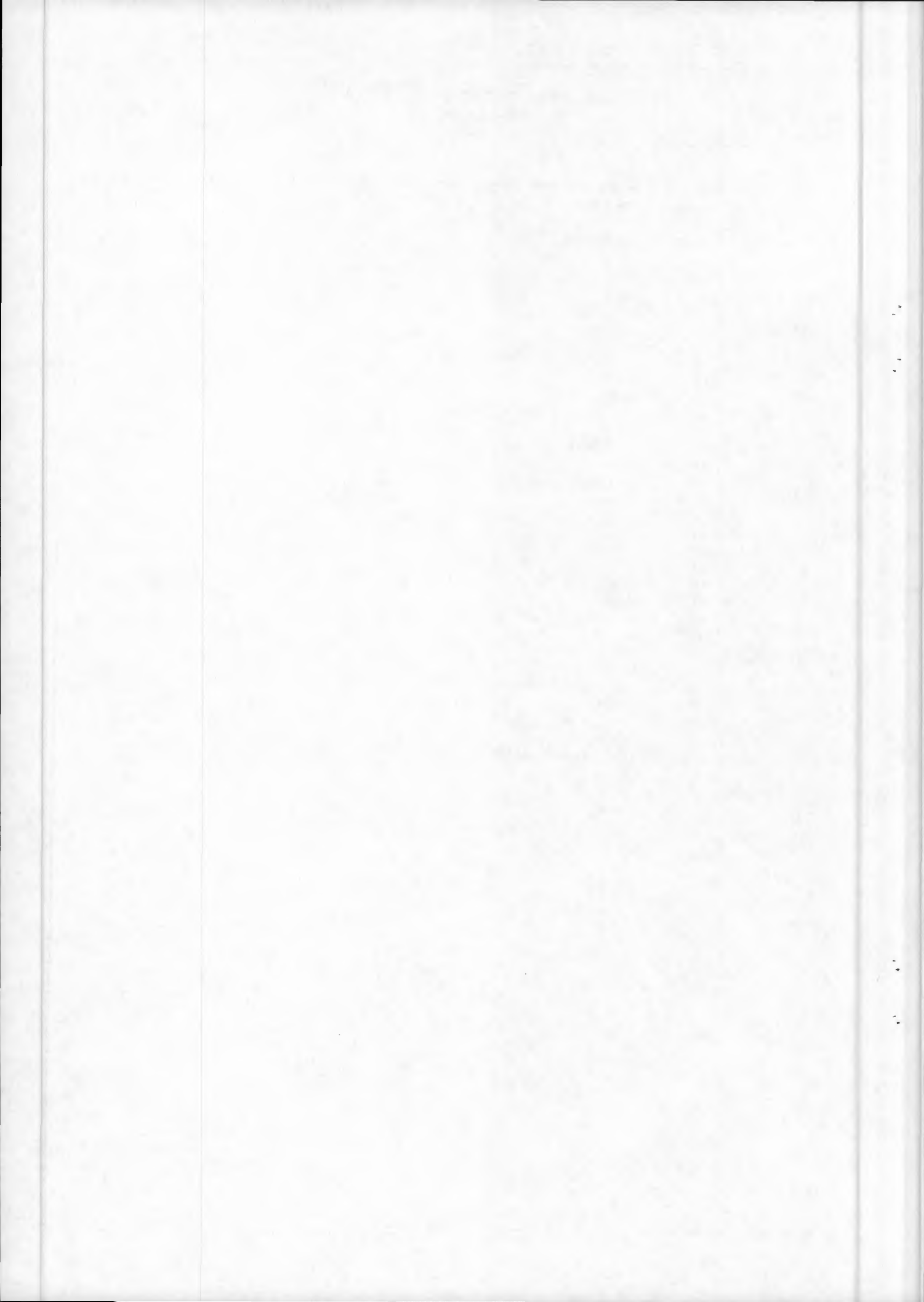




TABLE 3.6.2 RADAR ALTIMETER ULTRA STABLE OSCILLATOR DRIFT FORMAT

FIELD	BYTES	FORMAT	DESCRIPTION
1	1-29	A29	= 'RA USO FREQUENCY (millihertz)'
2	30-53	A24	Date and time (DD- <del>MM</del> -YYYY hh:mm:ss.sss)
3	54-63	I10	USO doppler compensated frequency (mhz) (value around 5M)

TABLE 3.7 ATTITUDE RECORD DEFINITION

FIELD	BYTES	FORMAT	DESCRIPTION
1	1-4	B4	Sequence Number (n)
2	5	B1	File Code (10)
3	6	B1	Record Code (42)
4	7	B1	Mission Code (36)
5	8	B1	Origin Code (50)
6	9-12	B4	Record length
7	13-16	I4	2nd sequence number
8	17-20	I4	Number of sub-records
9	21-44	A24	Table generation date and time DD- <del>MM</del> -YYYY hh:mm:ss.ttt with ttt meaning thousands of a second
10	45-152	F12.9	SAR Matrix 3x3 (F12.9 format)
11	153-260	F12.9	WIND FOR Matrix 3x3
12	261-368	F12.9	WIND MID Matrix 3x3
13	369-470	F12.9	WIND AFT Matrix 3x3
14	471-475	F5.2	RA coefficient (degrees)

The coefficients of each matrix are ordered sequentially column by column (A11, A21, ... A23, A33).  
The numbering of the matrix coefficients is relative to the real rotation matrix.  
The matrix structure is :

$$\begin{array}{rcl}
 \text{XANT} & = & \begin{matrix} \text{A11} & \text{A12} & \text{A13} \\ \text{A21} & \text{A22} & \text{A23} \\ \text{A31} & \text{A32} & \text{A33} \end{matrix} \begin{matrix} \text{XP} \\ \text{YP} \\ \text{ZP} \end{matrix} \\
 \text{YANT} & & \\
 \text{ZANT} & & 
 \end{array}$$

where (XANT, YANT, ZANT) is the antenna local reference frame and (XP, YP, ZP) is the attitude piloting reference frame as explained in doc. A-1, APPENDIX 2.  
The RA Coefficient represents the off pointing angle of the RA antenna.



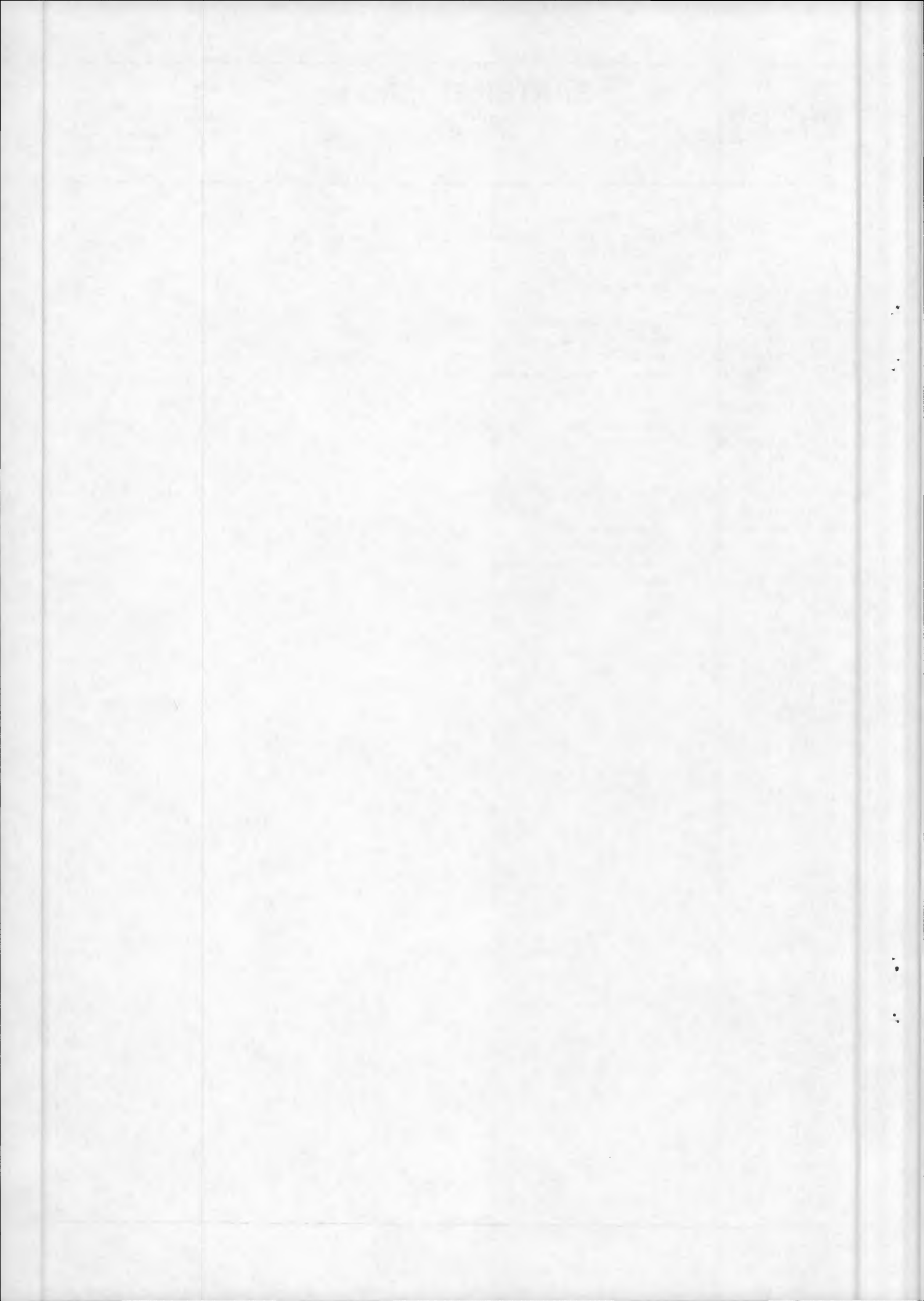
TABLE 4.1 DATA TYPE OPTION FILE - FILE DESCRIPTOR RECORD  
(FIXED SEGMENT) DEFINITION

FIELD	BYTES	FORMAT	DESCRIPTION	CONTENT
1	1-4	B4	Record sequence number	(1 )
2	5	B1	1-st record sub-type code	(63)
3	6	B1	Record type code	(192)
4	7	B1	2-nd record sub-type code	(18)
5	8	B1	3-rd record sub-type code	(18)
6	9-12	B4	Length of this record	(360)
7	13-14	A2	ASCII/EBCDIC flag	AS
8	15-16	A2	blanks	SS
9	17-28	A12	Format control document ID for this data file format	ERS1-ALT-CCT
10	29-30	A2	Format control document revision level	SA
11	31-32	A2	File design descriptor revision letter	SA
12	33-44	A12	Generating software release and revision level	<software.id.>
13	45-48	I4	File number	\$\$\$2
14	49-64	A16	File name	ERS1.ALT.RAWDTP
15	65-68	A4	Record sequence and location type flag	FSEQ
16	69-76	I8	Sequence number location	\$\$\$\$\$\$1
17	77-80	I4	Sequence number field length	\$\$\$4
18	81-84	A4	Record code and location type flag	FTYP
19	85-92	I8	Record code location	\$\$\$\$\$\$5
20	93-96	I4	Record code field length	\$\$\$4
21	97-100	A4	Record length and location type flag	FLGT
22	101-108	I8	Record length location	\$\$\$\$\$\$9
23	109-112	I4	Record length field length	\$\$\$4
24	113	A1	Reserved	blank
25	114	A1	Reserved	blank
26	115	A1	Reserved	blank
27	116	A1	Reserved	blank
28	117-180	A64	Reserved segment	blank



TABLE 4.1 DATA TYPE OPTIONS FILE - FILE DESCRIPTOR RECORD (Cont'd)  
 (VARIABLE SEGMENT) DEFINITION

FIELD	BYTES	FORMAT	DESCRIPTION
29	181-186	I6	number of DATA records in the DATA FILE
30	187-192	I6	length of the above records
31	193-216	A24	spare
32	217-220	I4	number of records in a product2-nd record s
33	221-228	I8	length of a product
34	229-236	A8	spare
35	237-240	I4	number of lines in a product
36	241-244	I4	number of measures per line
37	245-248	I4	spare
38	249-254	I6	length of a line
39	255-260	I6	length of a measure
40	261-268	I8	spare
41	269-272	A4	interleaving indicator
42	273-276	I4	length of main product header
43	277-280	I4	length of secondary product header
44	281-288	I8	spare
45	289-292	I4	\$\$\$0
46	293-296	I4	\$\$\$0
47	297-360	A64	spare



Each ALT.RAW product record (one for Altimeter source packet) has the same structure. This structure consists of three parts.

Record Header	( 20 bytes)
Source packet	(3132 bytes)
Product confidence data	(4 bytes)

TABLE 4.2 DATA OPTIONS FILE ALT.RAW RECORD DEFINITION

FIELD	BYTES	FORMAT	DESCRIPTION
1	1-4	B4	Record sequence number (n)
2	5	B1	File Code (70)
3	6	B1	Record Code (10)
4	7	B1	Mission Code (36)
5	8	B1	Origin Code (50)
6	9-12	B4	Length of this record (3156)
7	13-16	A4	blanks
8	17-20	A4	blanks
9	21-22	B2	Packet Identifier (status identifier)
10	23-24	B2	Packet Sequence Control
11	25-26	B2	Packet Length
12	27-31	B5	S/C Binary Counter
13	32-32	B1	Data Subset Counter
14	33-36	B4	a HTL Filter (X 1010)
15	37-40	B4	b HTL Filter (X 1010)
16	41-44	B4	a STL Filter (X 1010)
17	45-48	B4	b STL Filter (X 1010)
18	49-52	B4	a AGC Filter (X 1010)
19	53-56	B4	b AGC Filter (X 1010)
20	57-60	B4	Power Reference Value
21	61-66	B6	Spares
22	67-70	B4	Preset Duration
23	71-74	B4	Preset Time Delay
24	75-78	B4	Preset First Derivative of Time Delay
25	79-82	B4	Preset AGC
26	83-86	B4	Preset Slope
27	87-90	B4	RX Offset
28	91-124	A34	Spares





TABLE 4.2 DATA OPTIONS FILE ALT.RAW RECORD DEFINITION (Cont'd)

FIELD BYTES FORMAT DESCRIPTION

For each of 20 science blocks:

29	125-126	B2	Mode Identifier
30	127-130	B4	Noise Floor Estimation
31	131-134	B4	HTL Discriminator o/p (12.5NS X 10000)
32	135-138	B4	STL Discriminator o/p (slope units X 100)
33	139-142	B4	AGC Discriminator o/p (counts X 10)
34	143-146	B4	HTL Beta Branch (X 106)
35	147-148	B2	first Waveform sample
.....			
98	233-234	B2	64th Waveform sample
99	235-238	B4	Time Delay (12.5ns X 1000)
100	239-242	B4	Slope (slope units X 100)
101	243-246	B4	AGC (dB X 100)

repetition of fields 29 to 101 nineteen times

product confidence data

1489 3153-3154 B2 Acquisition PCD :  
bit 1 = carrier lock  
bits 2-5 = automatic gain control value  
bits 6-9 = real time BER  
bits 10-13 = play back BER  
bit 14 = I lock  
bit 15 = Q lock  
bit 16 = Acq-PCD valid

1490 3155-3156 B2 Ingestion : PCD : byte 159  
bit 1 = frame synchronizer lack  
bit 2 = frame synchronizer BER valid  
bit 3-6 = frame synchronizer BER  
bits 7-8 = spare  
reconstruction PCD : byte 160  
(result of applying inclusive .OR.  
to all SPRECONPCD available  
for this source packet)  
bit 1 = frame synchronizer parity flag  
bit 2 = frame cheksum flag  
bit 3 = frame lock  
bit 4-8 = spare



TABLE 5.1 NULL VOLUME DESCRIPTOR RECORD

FIELD	BYTES	FORMAT	DESCRIPTION	CONTENT
1	1-4	B4	Record sequence number	(1)
2	5	B1	1-st record subtype code	(192)
3	6	B1	Record type code	(192)
4	7	B1	2-nd subtype code	(63)
5	8	B1	3-rd subtype code	(18)
6	9-12	B4	Length of this record	(360)
7	13-14	A2	ASCII/EBCDIC flag	AS
8	15-16	A2	blanks	\$\$
9	17-28	A12	format control document	CCB-CCT-0002
10	29-30	A2	Superstructure format control document	AS
11	31-32	A2	Superstructure record format revision	AS
12	33-44	A12	Logical volume generating facility software release and revision level	<software.id.>
13	45-60	A16	ID of physical volume containing this volume descriptor	<physical.tape.id.>
14	61-76	A16	Logical volume identifier	<logical.set.id.>
15	77-92	A16	Volume set identifier	<volume.set.id.>
16	93-94	I2	Total number of physical volumes in the logical volume	\$1
17	95-96	I2	Physical volume sequence number of the first tape within the logical volume	\$1
18	97-98	I2	Physical volume sequence number of the last tape within the logical volume	\$1
19	99-100	I2	Physical volume sequence number of the current tape within the logical volume	\$1
20	101-101	I4	First referenced file number in this physical volume within the logical volume.	\$\$\$1
21	105-108	I4	Logical volume within a volume set	\$\$\$1
22	109-112	I4	Logical volume number within physical volume	\$\$\$1
23	113-120	A8	Logical volume creation date (YYYYMMDD)	<YYYYMMDD>
24	121-128	A8	Logical volume creation time (hhmmssdd, dd=deci-seconds)	<hhmmssdd>
25	129-140	A12	Logical volume generation country	<country..>
26	141-148	A8	Logical volume generating agency	<agency..>
27	149-160	A12	Logical volume generating facility	<facility.>
28	161-164	I4	Number of file pointer records in volume directory	\$\$\$0
29	165-168	I4	Number of records in volume directory	\$\$\$1
30	169-260	A92	Volume descriptor spare segment (always blank filled)	(blanks)
31	261-360	A100	Local use segment	(blanks)



