Annex C
JERS SAR.SLC
EXABYTE

Based on:
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TABLE OF CONTENTS

LIST OF TABLES

1. INTRODUCTION

Single Look Complex Digital

Acronym: **SAR.SLC**

The product SAR.SLC is a single look complex digital image generated from raw SAR data using up-to-date auxiliary parameters. The image, projected on slant range, referred to as ‘quarter scene’ or quadrant corresponds to approximately 75 km wide and at least 75 km. Long.

The JERS SAR.SLC format is based on the general definition of the SAR CEOS format (ref. ER-IS-EPO-GS-5902).

1.1 General Structure

The product spans over one exabyte and contains the following four files:

Volume Directory File Leader File Data Set File

1.2 Files Description

1.2.1 Volume Directory File:

Volume Descriptor Record	360 bytes
Leader File Pointer Record	360 bytes
Data Set File Pointer Record	360 bytes
Text Record	360 bytes

1.2.2 Leader File:

File Descriptor Record	720 bytes
Data Set Summary Record	1886 bytes
Map Projection Record	1620 bytes
Platform Position Data Record	1046 bytes
Facility Related Data Record General Type	12288 bytes
Facility Related Data Record PCS Quality Type	12288 bytes

1.2.3 Data Set File:

File Descriptor Record	22196 bytes
Image Data Records	22196 bytes

1.2.4 Null Volume File:

Volume Descriptor Record	360 bytes

1.2.5 Notation conventions

$ - the use of the "$"' (dollar sign) in the documentation denotes a requirement for the blank character (ie. the ASCII pt 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 by the facility generating the tape.

<.....> - this expression is used to denote the contents of an alphanumeric field, which will vary depending on the product type or data origin and will have to be supplied by the facility generating the tape.

<$...$> - this expression is used to denote a blank field.

1.2.6 File Class

	Class Code	Data Type
“8BITASCII$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

1.2.7 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$$$$$$$$$"	"IU1$"	1 byte wide
"UNSIGNED$INTEGER*2$$$$$$$$$"	"IU2$"	2 byte wide
"UNSIGNED$INTEGER*4$$$$$$$$$"	"IU4$"	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$$$$$$$$$$$$$$$$$$$$"	"R*2$"	2 byte wide
"REAL*4$$$$$$$$$$$$$$$$$$$$"	"R*4$"	4 byte wide
"REAL*8$$$$$$$$$$$$$$$$$$$$"	"R*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$HEXADECIMAL$$$$$$$$$"	"R*2H"	2 byte wide
"REAL*4$HEXADECIMAL$$$$$$$$$"	"R*4H"	4 byte wide
"REAL*8$HEXADECIMAL$$$$$$$$$"	"R*8H"	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$$$$$$$$$$$$$$$$$$"	"C*4$"	4 byte wide
"COMPLEX*8$$$$$$$$$$$$$$$$$$"	"C*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$$$$$$$$$$"	"CI*2"	2 byte wide
"COMPLEX$INTEGER*4$$$$$$$$$$"	"CI*4"	4 byte wide
"COMPLEX$INTEGER*8$$$$$$$$$$”	"CI*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$$$$"	"CIS2"	2 byte wide
"COMPLEX$SIGNED$INTEGER*4$$$$"	"CIS4"	4 byte wide
"COMPLEX$SIGNED$INTEGER*8$$$$"	"CIS8"	8 byte wide

- similar to the complex floating point representation above except that each component is stored as a signed integer.

"COMPLEX*4$HEXADECIMAL$$$$$$$"	"C*4H"	4 byte wide
"COMPLEX*8$HEXADECIMAL$$$$$$$"	"C*8H"	8 byte wide

- same as the floating point complex notation above except that the representation follows the hexadecimal conventions.

1.2.9 Records in products

Volume Directory File

	CEOS Codes
VOLUME DESCRIPTOR RECORD	192,192,18,18
FILE POINTER RECORD	219,192,18,18
TEXT RECORD	18,63,18,18

Leader File

FILE DESCRIPTOR RECORD	63,192,18,18
DATA SET SUMMARY RECORD	10,10,31,20
MAP PROJECTION DATA RECORD	10,20,31,20
PLATFORM POSITION DATA RECORD	10,30,31,20
FACILITY RELATED DATA RECORD GENERAL TYPE	10,200,31,50
FACILITY RELATED DATA RECORD PCS QUALITY TYPE	10,200,31,50

SAR Data File

FILE DESCRIPTOR RECORD	63,192,18,18
PROCESSED DATA RECORD	50,11,31,20

Null Volume

NULL VOLUME DESCRIPTOR RECORD	192,192,63,18

1.3 Note:

Fields not provided are treated as follows:(for a case of a field 8 bytes long)

Field type	Format	Filler
alphanumeric	A8	8 blanks
numeric integer	Iw	-9999999
numeric floating point	F8.2	-9999.99
numeric exponential	E8.2	-9999.99E-99

WARNING: Please be aware that the field “Example with SLC product” in the following tables, contains

only an EXAMPLE of what can be found in a product.

2. VOLUME DIRECTORY FILE FORMAT DEFINITION

Table 1 ***VOLUME DESCRIPTOR RECORD***

FIELD	BYTES	FORMAT	DESCRIPTION	EXAMPLE with SLC product	UNITS
1	1-4	B4	Record sequence number	1	
2	5-5	B1	1st record sub-type code	192	
3	6-6	B1	Record type code	192	
4	7-7	B1	2-nd record sub-type code	18	
5	8-8	B1	3-rd record sub-type code	18	
6	9-12	B4	Length of this record	360	
7	13-14	A2	ASCII/EBCDIC Flag	A	
8	15-16	A2	Blanks		
9	17-28	A12	Format control document	CCB-CCT-0002	
10	29-30	A2	Superstructure format control document	E	
11	31-32	A2	Superstructure record format revision	A	
12	33-44	A12	Logical volume generating facility software release and revision level	SARPS 1.5.5	
13	45-60	A16	ID of physical volume containing this volume descriptor		
14	61-76	A16	Logical volume identifier	JERS.SAR.SLC01	
15	77-92	A16	Volume set identifier		
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 current tape within the logical volume	1	
20	101-104	I4	First referenced file number in this physical volume within the logical volume	1	
21	105-108	I4	Logical volume number within volume set	1	
22	109-112	I4	Logical volume number within physical volume	1	
23	113-120	A8	Logical volume creation date (YYYYMMDD)	19980909	
24	121-128	A8	Logical volume creation time (HHMMSSDD, DD=deci-seconds) (DD not provided)	18123000	
25	129-140	A12	Logical volume generation country	AUSTRALIA	
26	141-148	A8	Logical volume generating agency	AUSLIG	
27	149-160	A12	Logical volume generating facility	ACRES	
28	161-164	I4	Number of pointer records in volume directory	2	
29	165-168	I4	Number of records in volume directory	4	
30	169-172	I4	Total number of logical volumes in the set	1	
31	173-260	A88	Volume descriptor spare segment (Not provided) (always blanks filled)		
32	261-360	A100	Local use segment (Not provided)		

Table 2 ***LEADER FILE POINTER RECORD***

FIELD	BYTES	FORMAT	DESCRIPTION	EXAMPLE with SLC product	UNITS
1	1-4	B4	Record sequence number	2	
2	5-5	B1	1st record sub-type code	219	
3	6-6	B1	Record type code	192	
4	7-7	B1	2nd record sub-type code	18	
5	8-8	B1	3rd record sub-type code	18	
6	9-12	B4	Length of this record	360	
7	13-14	A2	ASCII/EBCDIC Flag	A	
8	15-16	A2	Blanks		
9	17-20	I4	Referenced file number	1	
10	21-36	A16	Referenced file name	JERS.SAR.SLCLEAD	
11	37-64	A28	Referenced file class	SARLEADER FILE	
12	65-68	A4	Referenced file class code	SARL	
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	6	
16	109-116	I8	Referenced file - 1st record length	720	
17	117-124	I8	Referenced file maximum record length	12288	
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, 1st record number for this physical volume	1	
23	153-160	I8	Referenced file portion end, last record number for this physical volume	6	
24	161-260	A100	File pointer spare segment (Not provided)		
25	261-360	A100	Local use segment (Not provided)		

Table 3 ***DATA FILE POINTER RECORD***

FIELD	BYTES	FORMAT	DESCRIPTION	EXAMPLE with SLC product	UNITS
1	1-4	B4	Record number	3	
2	5	Bl	1-st record subtype code	219	
3	6	Bl	Record type code	192	
4	7	Bl	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	A	
8	15-16	A2	Blank		
9	17-20	I4	Referenced file number	2	
10	21-36	A16	Referenced file name	JERS.SAR.SLCIMGY	
11	37-64	A28	Referenced file class	IMAGERY OPTIONS FILE	
12	65-68	A4	Referenced file class code	IMOP	
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 (Depending on product type)	19203	
16	109-116	I8	Referenced file 1-st record length (Depending on product type)	22196	
17	117-124	I8	Referenced file maximum record length (Depending on product type)	22196	
18	125-136	A12	Referenced file record length type	FIXED LENGTH	
19	137-140	A4	Referenced file record length type code	FIXD	
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 (Depending on product type)	19203	
24	161-260	Al00	File pointer spare segment (Not provided)		
25	261-360	Al00	Local use segment		

Table 4 ***TEXT RECORD***

FIELD	BYTES	FORMAT	DESCRIPTION	EXAMPLE with SLC product	UNITS
1	1-4	B4	Record sequence number	4	
2	5-5	B1	1st record sub-type code	18	
3	6-6	B1	Record type code	63	
4	7-7	B1	2nd record sub-type code	18	
5	8-8	B1	3rd record sub-type code	18	
6	9-12	B4	Length of this record	360	
7	13-14	A2	ASCII/EBCDIC Flag	A	
8	15-16	A2	Continuation flag (*)		
9	17-56	A40	Product type specifier	PRODUCT:JERS.SAR.SLC	
10	57-116	A60	Location and date/time of product creation	GENERATED AT ACRES 1998- 9-25 15: 2:19	
11	117-156	A40	Physical volume identification	EXA	
12	157-196	A40	Scene identification	ORBIT: 28052 DATE: 19970329013600330	
13	197-236	A40	Scene location	LONG/E:130.7933044 LAT/N:-12.6830406	
14	237-256	A20	*Spares*		
15	257-360	A104	*Spares*		

(*) this field is set to “C$” if information is continued on the next text record (if any).

3. LEADER FILE FORMAT DEFINITION

Table 5 ***SAR - LEADER FILE, FILE DESCRIPTOR RECORD***

FIELD	BYTES	FORMAT	DESCRIPTION	EXAMPLE with SLC product	UNITS
1	1-4	B4	Record Sequence Number	1	
2	5	B1	1st record sub-type code	63	
3	6	B1	Record type code	192	
4	7	B1	2nd record sub-type code	18	
5	8	B1	3rd record sub-type code	18	
6	9-12	B4	Length of this record	720	
7	13-14	A2	ASCII/EBCDIC Flag	A	
8	15-16	A2	Blanks		
9	17-28	A12	Format control document ID for this data file format	CEOS-SAR-CCT	
10	29-30	A2	Format control document revision level	B	
11	31-32	A2	File design descriptor revision letter	B	
12	33-44	A12	Generating software release and revision level	SARPS 1.5.5	
13	45-48	I4	File number	1	
14	49-64	A16	File name	JERS.SAR.SLCLEAD	
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	
24-27	113-116	A1	*Reserved*		
28	117-180	A64	Reserved segment		
29	181-186	I6	Number of data set summary records	1	
30	187-192	I6	Data set summary record length	1886	
31	193-198	I6	Number of map projection data records	1	
32	199-204	I6	Map projection record length	1620	
33	205-210	I6	Number of platform pos. data records	1	
34	211-216	I6	Platform position record length	1046	
35	217-222	I6	Number of attitude data records	0	

36	223-228	I6	Attitude data record length	0	
37	229-234	I6	Number of radiometric data records	0	
38	235-240	I6	Radiometric record length	0	
39	241-246	I6	Number of rad. compensation records	0	
40	247-252	I6	Radiometric compensation rec. length	0	
41	253-258	I6	Number of data quality summary records	0	
42	259-264	I6	Data quality summary record length	0	
43	265-270	I6	Number of data histograms records	0	
44	271-276	I6	Data histogram record length	0	
45	277-282	I6	Number of range spectra records	0	
46	283-288	I6	Range spectra record length	0	
47	289-294	I6	Number of DEM descriptor records	0	
48	295-300	I6	DEM descriptor record length	0	
49	301-306	I6	Number of radar par. update records	0	
50	307-312	I6	Radar par. update record length	0	
51	313-318	I6	Number of annotation data records	0	
52	319-324	I6	Annotation data record length	0	
53	325-330	I6	Number of det.processing records	0	
54	331-336	I6	Det.processing record length	0	
55	337-342	I6	Number of calibration records	0	
56	343-348	I6	Calibration record length	0	
57	349-354	I6	Number of GCP records	0	
58	355-360	I6	GCP record length	0	
59-68	361-420	I6	*Spare*		
69	421-426	I6	Number of facility data records	2	
70	427-432	I6	Facility data record maximum length	12288	
71	433-720	A2	Blanks(288)		

Table 6 ***SLC DATA SET SUMMARY RECORD***

FIELD	BYTES	FORMAT	DESCRIPTION	EXAMPLE with SLC product	UNITS
1	1 - 4	B4	Record sequence number	2	
2	5	B1	1-st record sub-type code	10	
3	6	B1	Record-type code	10	
4	7	B1	2 nd record sub-type code	31	
5	8	B1	3 rd record sub-type code	20	
6	9-12	B4	Length of this record	1886	
7	13-16	I4	Data Set Summary Record sequence number (starts at 1)	1	

SCENE PARAMETERS

8	17-20	I4	SAR channel indicator	1	
9	21-36	A16	*Reserved*		
10	37-68	A32	Scene reference number (e.g. orbit - frame number)	28052	
11	69-100	A32	Scene centre time (UTC) <YYYYMMDDhhmmssttt> [left justified]	19970329013600330	
12	101-116	A16	*Spare*		
13	117-132	F16.7	Processed scene centre geodetic latitude (positive for North latitude, negative for South latitude)	–12.6830404	degrees
14	133-148	F16.7	Processed scene centre longitude (negative for West longitude)	130.7933088	degrees
15	149-164	F16.7	Processed scene centre true heading	12.5404999	degrees
16	165-180	A16	Ellipsoid designator	WGS84	
17	181-196	F16.7	Ellipsoid semimajor axis	6378137.0000000	m
18	197-212	F16.7	Ellipsoid semiminor axis	6356752.0000000	m
19	213-228	F16.7	Earth mass times gravitational constant (M . G)	0.0000000	$kg.m/s^2$
20	229-244	A16	*Spare*		
21	245-260	F16.7	Ellipsoid J2 parameter		
22	261-276	F16.7	Ellipsoid J3 parameter		
23	277-292	F16.7	Ellipsoid J4 parameter		
24	293-308	A16	*Spare*		
25	309-324	F16.7	*Reserved*		
26	325-332	I8	Scene centre line number (Depending on product type) (the line number at the scene centre including zero fill)	9601	
27	333-340	I8	Scene centre pixel number (Depending on product type) (the pixel number at the scene centre including zero fill)	2773	

28	341-356	F16.7	Processed scene length including zero fill	87.0960314	km
29	357-372	F16.7	Processed scene width including zero fill	76.6103438	km
30	373-388	A16	*Spare*		

GENERAL MISSION / SENSOR PARAMETERS

31	389-392	I4	Number of SAR channels	1	
32	393-396	A4	*Spare*		
33	397-412	A16	Sensor platform mission identifier	JERS	
34	413-444	A32	Sensor ID and mode of operation for this channel <AAAAAA-BB-CC-DD-EF> where : AAAAAA = sensor identifier; BB = SAR band; CC = resolution mode code; DD = imaging mode code; E = transmit polarisation; F = receiver polarisation	SAR-L-HR-IM-HH	
35	445-452	A8	Orbit number	28052	
36	453-460	F8.3	Sensor platform geodetic latitude at nadir corresponding to scene centre (positive for North latitude)	–13.236	degrees
37	461-468	F8.3	Sensor platform longitude at nadir corresponding to scene centre (negative for West longitude)	134.619	degrees
38	469-476	F8.3	Sensor platform heading at nadir corresponding to scene centre (clockwise positive from North)	191.522	degrees
39	477-484	F8.3	Sensor clock angle as measured relative to sensor platform flight direction		degrees
40	485-492	F8.3	Incidence angle at scene centre as derived from sensor platform orientation	39.455	degrees
41	493-500	F8.3	Radar frequency	1.275	GHz
42	501-516	F16.7	Radar wavelength	0.2307692	meters
43	517-518	A2	Motion compensation indicator "00" = no compensation, "01" = on board compensation, "10" = in processor compensation, "11" = both on board and in processor	00	
44	519-534	A16	Range pulse code specifier		
45	535-550	E16.7	Nominal range pulse (chirp) amplitude coefficient, Constant term		
46	551-566	E16.7	Nominal range pulse (chirp) amplitude coefficient, Linear term		sec^{-1}
47	567-582	E16.7	Nominal range pulse (chirp) amplitude coefficient, Quadratic term		sec^{-2}
48	583-598	E16.7	Nominal range pulse (chirp) amplitude coefficient, Cubic term		sec^{-3}
49	599-614	E16.7	Nominal range pulse (chirp) amplitude coefficient, Quartic term		sec^{-4}
50	615-630	E16.7	Nominal range pulse (chirp) phase coefficient, Constant term		cycles
51	631-646	E16.7	Nominal range pulse (chirp) phase coefficient, Linear term		Hz
52	647-662	E16.7	Nominal range pulse (chirp) phase coefficient, Quadratic term		Hz/sec
53	663-678	E16.7	Nominal range pulse (chirp) phase coefficient, Cubic term		Hz/sec^2
54	679-694	E16.7	Nominal range pulse (chirp) phase coefficient, Quartic term		Hz/sec^3
55	695-702	I8	Down linked chirp extraction index		samples

56	703-710	A8	*Spare*		
57	711-726	F16.7	Range sampling rate		MHz
58	727-742	F16.7	Range gate delay at early edge (in time) at the start of the image (Not provided)		microsec
59	743-758	F16.7	Range pulse length		microsec
60	759-762	A4	*Reserved*		
61	763-766	A4	Range compressed flag (YES = range compressed data)		
62-63	767-798	2 F16.7	*Reserved*		
64	799-806	I8	Quantization per channel I & Q (3I 3Q)	3	bits
65	807-818	A12	Quantizer descriptor	UNIFORM I Q	
66	819-834	F16.7	DC Bias for I-component (actual value)	3.3305996	
67	835-850	F16.7	DC Bias for Q-component (actual value)	3.0799004	
68	851-866	F16.7	Gain imbalance for I & Q (actual value)	0.06145790	
69-70	867-898	F16.7	*Spare*		
71	899-914	F16.7	*Reserved*		
72	915-930	F16.7	Antenna mechanical boresight angle relative to platform vertical axis		degrees
73	931-934	A4	*Reserved*		
74	935-950	F16.7	Pulse Repetition Frequency (PRF) (actual value)	1555.2000000	Hz
75-76	951-982	F16.7	*Reserved*		

SENSOR SPECIFIC PARAMETERS

77	983-998	I16	Satellite encoded binary time code		
78	999-1030	A32	Satellite clock time (UTC) <YYYYMMDDhhmmssttt> [left justified]		
79	1031-1038	I8	Satellite clock step length		nanosec
80	1039-1046	A8	*Spare*		

GENERAL PROCESSING PARAMETERS

81	1047-1062	A16	Processing facility identifier	ACRES	
82	1063-1070	A8	Processing system identifier	SARPS	
83	1071-1078	A8	Processing version identifier	1.5.5	
84-85	1079-1110	A16	*Reserved*		
86	1111-1142	A32	Product type specifier	SLANT RANGE COMPLEX	
87	1143-1174	A32	Processing algorithm identifier	RANGE / AZIMUTH COMPRESSION	
88	1175-1190	F16.7	Nominal number of looks processed in azimuth	1.0000000	looks
89	1191-1206	F16.7	Nominal number of looks processed in range	1.0000000	looks
90	1207-1222	F16.7	Bandwidth per look in azimuth (null-to-null)		Hz
91	1223-1238	F16.7	Bandwidth per look in range		MHz
92	1239-1254	F16.7	Total processor bandwidth in azimuth		Hz

93	1255-1270	F16.7	Total processor bandwidth in range		MHz
94	1271-1302	A32	Weighting function designator in azimuth	KAISER BETA=2.120	
95	1303-1334	A32	Weighting function designator in range	KAISER BETA=2.120	
96	1335-1350	A16	Data input source	HDDT	
97	1351-1366	F16.7	Nominal resolution in range (3-dB width)	14.0230820	m
98	1367-1382	F16.7	Nominal resolution in azimuth (3-dB width)	5.6263611	m
99-100	1383-1414	F16.7	*Reserved*		
101	1415-1430	F16.7	Along track Doppler frequency centroid at early edge of image, Constant term		Hz
102	1431-1446	F16.7	Along track Doppler frequency centroid at early edge of image, Linear term		Hz/sec
103	1447-1462	F16.7	Along track Doppler frequency centroid at early edge of image, Quadratic term		Hz/sec/sec
104	1463-1478	A16	*Spare*		
105	1479-1494	F16.7	Cross track Doppler frequency centroid at early edge of image, Constant term (Doppler centroid)	2257.5600000	Hz
106	1495-1510	F16.7	Cross track Doppler frequency centroid at early edge of image, Linear term (Slope of Doppler centroid)	0.003993500	Hz/sec
107	1511-1526	F16.7	Cross track Doppler frequency centroid at early edge of image, Quadratic term	-0.0000000000000	Hz/sec/sec
108	1527-1534	A8	Time direction indicator along pixel direction	DECREASE	
109	1535-1542	A8	Time direction indicator along line direction	INCREASE	
110	1543-1558	F16.7	Along track Doppler frequency rate at early edge of image, Constant term		Hz/sec
111	1559-1574	F16.7	Along track Doppler frequency rate at early edge of image, Linear term		Hz/sec/sec
112	1575-1590	F16.7	Along track Doppler frequency rate at early edge of image, Quadratic term		Hz/sec/sec/sec
113	1591-1606	A16	*Spare*		
114	1607-1622	F16.7	Cross track Doppler frequency rate at early edge of image, Constant term (Azimuth FM rate)		Hz/sec
115	1623-1638	F16.7	Cross track Doppler frequency rate at early edge of image, Linear term (Slope of Azimuth FM rate)		Hz/sec/sec
116	1639-1654	F16.7	Cross track Doppler frequency rate at early edge of image, Quadratic term		Hz/sec/sec/sec
117	1655-1670	A16	*Spare*		
118	1671-1678	A8	Line content indicator		
119	1679-1682	A4	Clutterlock applied flag	YES	
120	1683-1686	A4	Autofocussing applied flag	YES	
121	1687-1702	F16.7	Line spacing	4.5357792	m
122	1703-1718	F16.7	Pixel spacing (in slant range)	8.7781816	m
123	1719-1734	A16	Processor range compression designator	Extracted Chirp	
124-125	1735-1766	A16	*Spare*		

SENSOR SPECIFIC LOCAL USE SEGMENT

126/1	1767-1782	F16.7	Zero-doppler range time (two-way) of first range pixel		millisec

126/2	1783-1798	F16.7	Zero-doppler range time (two-way) of centre range pixel		millisec
126/3	1799-1814	F16.7	Zero-doppler range time (two-way) of last range pixel		millisec
126/4	1815-1838	A24	Zero-doppler azimuth time of first azimuth pixel (UTC) <dd-MMM-yyyy$hh:mm:ss.ttt>		
126/5	1839-1862	A24	Zero-doppler azimuth time of centre azimuth pixel (UTC) <dd-MMM-yyyy$hh:mm:ss.ttt>		
126/6	1863-1886	A24	Zero-doppler azimuth time of last azimuth pixel (UTC) <dd-MMM-yyyy$hh:mm:ss.ttt>		

Table 7 ***MAP PROJECTION DATA RECORD***

FIELD	BYTES	FORMAT	DESCRIPTION	EXAMPLE with SLC product	UNITS
1	1 - 4	B4	Record sequence number	3	
2	5	B1	1-st record sub-type code	10	
3	6	B1	Record-type code	20	
4	7	B1	2 nd record sub-type code	31	
5	8	B1	3 rd record sub-type code	20	
6	9-12	B4	Length of this record	1620	
7	13-28	A16	*Spare*		

MAP PROJECTION GENERAL INFORMATION

8	29-60	A32	Map projection descriptor	Slant range	
9	61-76	I16	Number of pixels per line of image (Depending on product type)	5546	pixels
10	77-92	I16	Number of lines (Depending on product type)	19202	lines
11	93-108	F16.7	Nominal inter-pixel distance in output scene	7.7781816	m
12	109-124	F16.7	Nominal inter-line distance in output scene	4.5357792	m
13	125-140	F16.7	Orientation at output scene centre [for geocoded products this is simply the convergence of the meridians, ie: the angle between geographic north and map grid north (Angle of projection axis from true North)]	12.5404999	degrees
14	141-156	F16.7	Nominal platform orbital inclination (168days=98.491, 35days=98.516, 3days=98.542)		degrees
15	157-172	F16.7	Actual ascending node (longitude at Equator)		degrees
16	173-188	F16.7	Geocentre to platform distance at input scene centre (Not provided)		
17	189-204	F16.7	Platform geodetic altitude over the ellipsoid (Not provided)		
18	205-220	F16.7	Ground speed at nadir at input scene centre time (Not provided)		
19	221-236	F16.7	Platform heading at nadir corresponding to scene centre	191.5219273	degrees
20	237-268	A32	Name of reference ellipsoid	WGS84	
21	269-284	F16.7	Semimajor axis of ref.ellipsoid	6378.1370000	km
22	285-300	F16.7	Semiminor axis of ref.ellipsoid	6356.7520000	km
23 to 55	301-880	A580	*Reserved*		
56 to 59	881-944	4 A16	*Spares*		

COORDINATES OF FOUR CORNER POINTS

60 to 67	945-1072	A128	*Reserved*		

68	1073-1088	F16.7	1st line 1st pixel geodetic latitude (positive for North latitude)	-12.2269972	degrees
69	1089-1104	F16.7	1st line 1st pixel longitude (negative for West longitude)	130.5402640	degrees
70	1105-1120	F16.7	1st line last pixel geodetic latitude	-12.3779469	degrees
71	1121-1136	F16.7	1st line last pixel longitude	131.2349383	degrees
72	1137-1152	F16.7	Last line last pixel geodetic latitude	-13.1434898	degrees
73	1153-1168	F16.7	Last line last pixel longitude	131.0678865	degrees
74	1169-1184	F16.7	Last line 1st pixel geodetic latitude	-12.9916730	degrees
75	1185-1200	F16.7	Last line 1st pixel longitude	130.3708229	degrees
76 to 96	1201-1620	A420	*Reserved & spares*		

Table 8 ***SLC PLATFORM POSITION DATA RECORD***

FIELD	BYTES	FORMAT	DESCRIPTION	EXAMPLE with SLC product	UNITS
1	1 - 4	B4	Record sequence number	4	
2	5	B1	1-st record sub-type code	10	
3	6	B1	Record-type code	30	
4	7	B1	2 nd record sub-type code	31	
5	8	B1	3 rd record sub-type code	20	
6	9-12	B4	Length of this record (not fixed length)	1046	
7	13-44	A32	*Reserved*		
8 to 13	45-140	6 F16.7	*Reserved*		

POSITIONAL DATA POINTS

14	141-144	I4	Number of data points	5	
15	145-148	I4	Year of data point <YYYY>	1997	
16	149-152	I4	Month of data point <$$MM>	3	
17	153-156	I4	Day of data point <$$DD>	29	
18	157-160	I4	Day in the year <GMT> (1st January = Day 1)	88	
19	161-182	D22.15	Seconds of day of data	5640.000000000000000	sec
20	183-204	D22.15	Time interval between data points	60.000000000000000	sec
21	205-268	A64	Reference coordinate system	Earth Fixed Reference System	
22	269-290	D22.15	Greenwich mean hour angle (Not provided by the VMP)	209.999283240000010	degrees
23	291-306	F16.7	Along track position error (Not provided by the VMP)		meters
24	307-322	F16.7	Across track position error (Not provided by the VMP)		meters
25	323-338	F16.7	Radial position error (Not provided by the VMP)		meters
26-28	339-386	F16.7	*Reserved*		

FIRST POSITIONAL DATA POINT

29	387-408	D22.15	1st data point - Position vector X	-4989010.4621420000000	m
	409-430	D22.15	1st data point - Position vector Y	4792385.15462000020000	m
	431-452	D22.15	1st data point - Position vector Z	-692618.96128100005000	m
30	453-474	D22.15	1st data point - Velocity vector X'	1585.728758000000000	m/s
	475-496	D22.15	1st data point - Velocity vector Y'	579.844164999999980	m/s
	497-518	D22.15	1st data point - Velocity vector Z'	-7463.048627999999600	m/s

SECOND POSITIONAL DATA POINT

31	519-540	D22.15	2nd data point - Position vector X	-4883278.6555469995000	m
	541-562	D22.15	2nd data point - Position vector Y	4816741.38248199970000	m
	563-584	D22.15	2nd data point - Position vector Z	-1138945.5304129999000	m
32	585-606	D22.15	2nd data point - Velocity vector X'	1939.166995000000000	m/s
	607-628	D22.15	2nd data point - Velocity vector Y'	223.745646999999990	m/s
	629-650	D22.15	2nd data point - Velocity vector Z'	-7397.3796430000000200	m/s
33-	EOR		Blanks		

Repetition of fields 29-30 as specified by the number of points in field 14 (usually 5 or 6 data points)

Table 9 ***SLC FACILITY RELATED DATA RECORD [GENERAL TYPE]***

FIELD	BYTES	FORMAT	DESCRIPTION	EXAMPLE with SLC product	UNITS
1	1 - 4	B4	Record sequence number	5	
2	5	B1	1-st record sub-type code	10	
3	6	B1	Record-type code	200	
4	7	B1	2 nd record sub-type code	31	
5	8	B1	3 rd record sub-type code	50	
6	9-12	B4	Length of this record	12288	
7	13-76	A64	Name of this facility related data record	FACILITY RELATED DATA RECORD GENERAL TYPE	

SIGNAL DATA QUALITY

8	77-82	A6	Date of last release of QC software <YYMMDD>	970901	
9	83-84	A2	*Spare*		
10	85-90	A6	Date of the last calibration update <YYMMDD>		
11	91-94	I4	Overall QA summary flag (Sum of the next 9 following flags)	0	
12	95-98	I4	PRF code change flag (0 = PRF constant in scene)	0	
13	99-102	I4	Sampling window start time change flag (0 = SWST constant)	0	
14	103-106	I4	Cal. system & receiver gain change flag (0 = Cal/Rx gain constant)	0	
15	107-110	I4	Chirp replica quality flag (0 = Replica XCF in limits)	0	
16	111-114	I4	Input data statistics flag (0 = Raw data mean & sd in limits)	0	
17	115-118	I4	Doppler centroid confidence measure flag (0 = in limits)	0	
18	119-122	I4	Doppler centroid value (0 = Dopp-centroid less than PRF/2)	0	
19	123-126	I4	Doppler ambiguity confidence measure flag (0 = in limits)	0	
20	127-130	I4	Output data mean flag (0 = Image mean or sd in limits)	0	
21	131-134	I4	On ground / on board range compressed flag (0 = OGRC)	0	
22	135-138	I4	Number of PRF code changes	0	
23	139-142	I4	Number of sampling window time changes		
24	143-146	I4	Number of calibration subsystems gain changes		
25	147-150	I4	Number of missing lines (i.e. raw data input lines)		
26	151-154	I4	Number of receiver gain changes		
27	155-170	F16.7	3-dB pulse width of (first) Chirp Replica Cross Correlation Function (CCF)		samples
28	171-186	F16.7	First side lobe level of chirp CCF		dB
29	187-202	F16.7	ISLR of chirp CCF function		dB

30	203-218	F16.7	Doppler centroid confidence measure (value normalized such that it takes a value of zero for the best case and a value of one for the worst case)		
31	219-234	F16.7	Doppler ambiguity confidence measure (value normalized such that it takes a value of one for the best case and a value of zero for the worst case)		
32	235-250	F16.7	Estimated mean of I input data (once the nominal bias of 15.5 has been applied)		
33	251-266	F16.7	Estimated mean of Q input data (once the nominal bias of 15.5 has been applied)		
34	267-282	F16.7	Estimated standard deviation of I input data		
35	283-298	F16.7	Estimated standard deviation of Q input data		
36	299-314	F16.7	Calibration system gain of first processed line (telemetry value)		
37	315-330	F16.7	Receiver gain of first processed line (telemetry value)		
38	331-346	F16.7	Doppler ambiguity number		
39	347-362	A16	*Spare*		

CALIBRATION INFORMATION

40	363-378	F16.7	Bias correction applied to I channel (to be added to the nominal bias)		
41	379-394	F16.7	Bias correction applied to Q channel (to be added to the nominal bias)		
42	395-410	F16.7	I/Q gain imbalance correction (applied to I channel)		
43	411-426	F16.7	I/Q gain imbalance correction (applied to Q channel)		
44	427-442	F16.7	I/Q non-orthogonality correction (applied to Q channel)		
45	443-458	A16	*Spare*		
46	459-474	F16.7	Estimated noise power per sample		
47	475-490	I16	Calibration pulse time delay		nanosec
48	491-494	I4	Number of valid calibration pulses		pulses
49	495-498	I4	Number of valid noise pulses		pulses
50	499-502	I4	Number of valid replica pulses		pulses
51	503-518	F16.7	First sample in replica (chirp extraction index)		samples
52	519-534	F16.7	Mean calibration pulse power		
53	535-550	F16.7	Mean noise pulse power		
54	551-566	F16.7	Range compression normalisation factor		
55	567-582	F16.7	Replica pulse power		
56	583-598	F16.7	Incidence angle at first range pixel (at mid-azimuth)	36.2227379	degrees
57	599-614	F16.7	Incidence angle at centre range pixel (at mid-azimuth)	39.1182277	degrees
58	615-630	F16.7	Incidence angle at last range pixel (at mid-azimuth)	41.6825620	degrees
59	631-646	F16.7	Slant range reference (for range spreading loss compensation)		km
60	647-658	A12	*Spare*		
61	659-662	I4	Antenna pattern correction flag (0 = no correction)	1	
62	663-678	F16.7	Absolute calibration constant K		scalar

63	679-694	F16.7	Upper bound calibration constant K (+ 3 std dev		
64	695-710	F16.7	Lower bound calibration constant K (- 3 std dev)		
65	711-726	F16.7	Estimated noise equivalent s^o		dB
66	727-732	A6	Date on which K was generated <YYMMDD>		
67	733-736	A4	K version number as XXYY, where XX refers to a K update implemented across the ground segment and YY refers to an upgrade only at the source facility (as may arise in case of local software updates)		

VARIOUS PARAMETERS
(from SPH fields)

68	737-740	I4	Number of duplicated input lines		
69	741-756	F16.7	Estimated bit error rate		
70	757-768	A12	*Spare*		
71	769-784	F16.7	Output image mean (Not provided)		
72	785-800	F16.7	Output image standard deviation (Not provided)		
73	801-816	F16.7	Output image maximum value (Not provided)		
74	817-840	A24	Time of raw data first input range line (UTC) <dd-MMM-yyyy$hh:mm:ss.ttt>		
75	841-864	A24	Time of ascending node state vectors (UTC) <dd-MMM-yyyy$hh:mm:ss.ttt>		
76 to 81	865-996	6 D22.15	Ascending node state vectors (X,Y,Z,X',Y',Z')		m & m/s
82	997-1000	I4	Output pixel bit length		bits
83	1001-1016	F16.7	Processor gain #1		
84	1017-1032	F16.7	Processor gain #2		
85	1033-1048	F16.7	Processor gain #3		
86	1049-1052	I4	Peak location of Cross Correlation Function (CCF) between first extracted chirp and nominal chirp		samples
87	1053-1068	F16.7	3-dB width of Cross Correlation Function (CCF) between last extracted chirp and nominal chirp		samples
88	1069-1084	F16.7	First side lobe level of chirp CCF between last extracted chirp and nominal chirp		dB
89	1085-1100	F16.7	ISLR of chirp CCF between last extracted chirp and nominal chirp		dB
90	1101-1104	I4	Peak location of Cross Correlation Function (CCF) between last extracted chirp and nominal chirp		samples
91	1105-1108	I4	Roll tilt mode flag (0 = not in roll tilt mode)		
92	1109-1112	I4	Raw data correction flag (0 = correction with defaults parameters)		
93	1113-1116	I4	Look detection flag (1 = power detected and summed)		
94	1117-1120	I4	Doppler ambiguity estimation flag (0 = no estimation done)		
95	1121-1124	I4	Azimuth baseband conversion flag (0 = no conversion done)		
96	1125-1128	I4	Samples per line used for the raw data analysis		samples

97	1129-1132	I4	Range lines skip factor for raw data analysis		lines
98	1133-1156	A24	Time of input state vector (UTC) used to processed the image <dd-MMM-yyyy$hh:mm:ss.ttt>		
99	1157-1178	D22.15	Input state vector - Position vector X		m
100	1179-1200	D22.15	Input state vector - Position vector Y		m
101	1201-1222	D22.15	Input state vector - Position vector Z		m
102	1223-1244	D22.15	Input state vector - Velocity vector X'		m/s
103	1245-1266	D22.15	Input state vector - Velocity vector Y'		m/s
104	1267-1288	D22.15	Input state vector - Velocity vector Z'		m/s
105	1289-1292	I4	Input state vector type flag (0 = ascending node state vectors, i.e predicted orbit, 1 = near scene state vectors, i.e. restituted, preliminary or precise orbit)		
106	1293-1308	F16.7	Window coefficient for range-matched filter		
107	1309-1324	F16.7	Window coefficient for azimuth-matched filter		
108	1325-1328	I4	Update period of range-matched filter		chirps
109	1329-1456	8 F16.7	Look scalar gains (up to 8 looks		
110	1457-1460	I4	Sampling window start time bias		nanosec
111	1461-1482	E22.15	Doppler centroid cubic coefficient		Hz/sec^3
112	1483-1486	I4	PRF code of first range line (telemetry value)		
113	1487-1490	I4	PRF code of last range line (telemetry value)		
114	1491-1494	I4	Sampl. wind. start time code of first range line (telemetry value)		
115	1495-1498	I4	Sampl. wind. start time code of last range line (telemetry value)		
116	1499-1502	I4	Calibration system gain of last processed line (telemetry value)		
117	1503-1506	I4	Receiver gain of last processed line (telemetry value)		
118	1507-1510	I4	First processed range sample		
119	1511-1514	I4	Azimuth FFT/IFFT ratio		
120	1515-1518	I4	Number of azimuth blocks processed		
121	1519-1526	I8	Number of input raw data lines (Depending on product type)		lines
122	1527-1530	I4	Initial Doppler ambiguity number		
123	1531-1578	3F16.7	Chirp quality thresholds - Pulse width of the chirp CCF - First sidelobe of the chirp CCF - ISLR of the chirp CCF		 pixels dB dB
	1579-1642	4F16.7	Input data statistic thresholds - Mean of input I data in fraction of maximum absolute of input data - Mean of input Q data in fraction of maximum absolute of input data - Standard deviation of input I data in fraction of maximum absolute of input data - Standard deviation of input Q data in fraction of maximum absolute of input data		
	1643-1674	2F16.7	Doppler ambiguity confidence thresholds		

	1675-1706	2F16.7	Output data statistic thresholds - Mean of outout data - Standard deviation of output data		
124	1707-1722	I16	Satellite binary time of first range line (telemetry value)		
125	1723-1726	I4	Number of valid pixels per rang eline (the remaining pixels are zero padded)		pixels
126	1727-1730	I4	Number of range samples discarded during processing interpolations		samples
127	1731-1746	F16.7	I/Q gain imbalance - Lower bound		
128	1747-1762	F16.7	I/Q gain imbalance - Upper bound		
129	1763-1778	F16.7	I/Q quadrature departure - Lower bound		degrees
130	1779-1794	F16.7	I/Q quadrature departure - Upper bound		degrees
131	1795-1810	F16.7	3-dB look bandwidth		Hz
132	1811-1826	F16.7	3-dB processed Doppler bandwidth		Hz
133	1827-1830	I4	Range spreading loss compensation flag (0 = no compensation)		
134	1831-1832	I1	Datation flag (1 = azimuth timing improved based on timing information of range line specified in field 136)		
135	1833-1838	I7	Maximum error of range line timing		nanosec
136	1839-1844	I7	Format number of range line used to synchronize the azimuth timing		
137	1845-1846	I1	Automatic look scalar gain flag (1= automatically calculated)		
138	1847-1850	I4	Maximum value of look scalar gain before the look scalar gains are normalised		
139	1851-1854	I4	Replica normalisation method flag (0 = normalised by replica power, i.e. $Z' = Z \cdot {}^{c}/A_r$ where A_r is the replica power and c is specified in field 54, 1 = normalised by the square root of replica power, i.e. Z' = Z / Ar)		
140	1855-1934	4 E20.10	4 coefficients of the ground range to slant range conversion polynomial .		
141	1935-2034	5 E20.10	5 coefficients of the antenna elevation pattern polynomial.		
142	2035-2050	E16.7	Range time of origin of antenna pattern polynomial		sec
143	2051-12288	A10238	*Spare*		

Table 10 ***SLC FACILITY RELATED DATA RECORD PCS TYPE***

FIELD	BYTES	FORMAT	DESCRIPTION	EXAMPLE with SLC product	UNITS
1	1 - 4	B4	Record sequence number	6	
2	5	B1	1-st record sub-type code	10	
3	6	B1	Record-type code	200	
4	7	B1	2 nd record sub-type code	31	
5	8	B1	3 rd record sub-type code	50	
6	9-12	B4	Length of this record	12288	
7	13-76	A64	Name of this facility related data record	FACILITY RELATED DATA RECORD [ESAPCS QUALITY TYPE]	
8	77-12288	B	reserved		

4. DATA SET FILE FORMAT DEFINITION

Table 11 ***SAR DATA FILE , FILE DESCRIPTOR RECORD (FIXED SEGMENT)***

FIELD	BYTES	FORMAT	DESCRIPTION	EXAMPLE with SLC product	UNITS
1	1-4	B4	Record sequence number	1	
2	5	B1	1st record sub-type code	63	
3	6	B1	Record sub-type code	192	
4	7	B1	2nd record sub-type code	18	
5	8	B1	3rd record sub-type code	18	
6	9-12	B4	Length of this record (Depending on product type)	22196	
7	13-14	A2	ASCII/EBCDIC flag	A	
8	15-16	A2	Blanks		
9	17-28	A12	Format control document ID for this data file format	CEOS-SAR-CCT	
10	29-30	A2	Format control document revision level	B	
11	31-32	A2	File design descriptor revision letter	B	
12	33-44	A12	Generating software release and revision level	SARPS 1.5.5	
13	45-48	I4	File number	2	
14	49-64	A16	File name	JERS.SAR.SLCIMGY	
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	
24-27	113-116	A1	*Reserved*		
28	117-180	A64	Reserved segment		

SAR DATA IMAGERY OPTIONS FILE, FILE DESCRIPTOR RECORD (VARIABLE SEGMENT)

29	181-186	I6	Number of SAR DATA records (nominal) (Depending on product type)	19202	
30	187-192	I6	SAR DATA record length (Depending on product type)	22196	bytes
31	193-216	A24	*Reserved*		

SAMPLE GROUP DATA

32	217-220	I4	Number of bits per sample	32	
33	221-224	I4	Number of samples per data group (or pixels)	1	
34	225-228	I4	Number of bytes per data group(or pixels)	4	
35	229-232	A4	Justification and order of samples within data group (Not provided)		

SAR RELATED DATA IN THE RECORD

36	233-236	I4	Number of SAR channels in this file	1	
37	237-244	I8	Number of lines per data set (nominal) (Depending on product type)	19202	
38	245-248	I4	Number of left border pixels per line	0	
39	249-256	I8	Total number of data groups per line per SAR channel (Depending on product type)	5546	
40	257-260	I4	Number of right border pixels per line	0	
41	261-264	I4	Number of topborder lines	0	
42	265-268	I4	Number of bottom border lines	0	
43	269-272	A4	Interleaving indicator	BSQ	

RECORD DATA IN THE FILE

44	273-274	I2	Number of physical records per line	1	
45	275-276	I2	Number of physical records per multi-channel line		
46	277-280	I4	Number of bytes of prefix data per record	0	
47	281-288	I8	Number of bytes of SAR data(or pixel data) per record (nominal) (Depending on product type)	22184	
48	289-292	I4	Number of bytes of suffix data per record	0	
49-55	293-340	A48	*Reserved*		
56	341-368	A28	Blanks		
57-60	369-400	A32	*Reserved*		
61	401-428	A28	SAR Data format type identifier	COMPLEX INTEGER	
62	429-432	A4	SAR Data format type code	CI *4	
63	433-436	I4	Number of left fill bits within pixel	0	
64	437-440	I4	Number of right fill bits within pixel	0	
65	441-448	I8	Maximum data range of pixel	65535	
66	449-EOR	A15564	*Spare*		

Table 12 ***IMAGERY OPTIONS FILE, PROCESSED DATA RECORD***

FIELD	BYTES	FORMAT	DESCRIPTION	EXAMPLE with SLC product	UNITS
1	1-4	B4	Record sequence number	2	
2	5	B1	1st record sub-type code	50	
3	6	B1	Record sub-type code	11	
4	7	B1	2nd record sub-type code	31	
5	8	B1	3rd record sub-type code	20	
6	9-12	B4	Length of this record (nominal) (Depending on product type)	22196	
7	13-16	C4	First sample of image line (Real and Imaginary part)		
8	17-20	C4	Second sample of image line (Real and Imaginary part)		
...	...	...	....		
5006	10009-10012	C4	Last sample of image line (Real and Imaginary part)		

5. NULL VOLUME FORMAT DEFINITION

Table 13 ***NULL VOLUME DESCRIPTOR RECORD***

FIELD	BYTES	FORMAT	DESCRIPTION	EXAMPLE with SLC product	UNITS
1	1-4	B4	Record sequence number	1	
2	5	B1	1st record sub-type code	192	
3	6	B1	Record sub-type code	192	
4	7	B1	2nd record sub-type code	63	
5	8	B1	3rd record sub-type code	18	
6	9-12	B4	Length of this record	360	
7	13-14	A2	ASCII/EBCDIC flag	A	
8	15-16	A2	Blanks		
9	17-28	A12	Format control document	CCB-CCT-0002	
10	29-30	A2	Superstructure document	E	
11	31-32	A2	Superstructure record format revision	A	
12	33-44	A12	Logical volume generating facility software release and revision level	SARPS 1.5.5	
13	45-60	A16	ID of physical volume containing this volume descriptor		
14	61-76	A16	Logical volume identifier	JERS.SAR.SLC01	
15	77-92	A16	Volume set identifier		
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 in the logical volume	1	
19	99-100	I2	Physical volume sequence number of the current tape within the logical volume	1	
20	101-104	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)	1998 9 9	
24	121-128	A8	Logical volume creation time (hhmmssdd, dd-deci-seconds) (dd not provided)	18123000	
25	129-140	A12	Logical volume generation country	AUSTRALIA	
26	141-148	A8	Logical volume agency	AUSLIG	
27	149-160	A12	Logical volume generating facility	ACRES	
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)		
31	261-360	A100	Local use segment (Not provided)		