CZCS LEVEL 1 PRODUCT

CCT FORMAT SPECIFICATIONS

Release 1.1

ESA EARTHNET

February 1991

1. Overview of the CZCS Level 1 CCT format

1.1 Format structure

The ESA/EPO NIMBUS-7 CZCS Level 1 products are recorded on Computer Compatible Tape(CCTs) in a format that is "partially" conformed to the Standard Family Format(SFF) convention. The Standard Family Formac structure is shown in Fig.1.

Conventionally, the individual tape is referred to as a physical volume. The logical volume refers to data files logically grouped on the tape. The SEF allows that more than one logical volume (a volume set) be stored on the same physical volume. One logical volume can also be split between different physical volumes.

The logical volume of ESA/EPO CZCS Level 1 product consists of the following files.

(1)A volume directory file which contains the logical and physical structure of the tape (the number of all files on the CCT, the position and content of these files, the number of records and maximum record length within each file).

A volume directory file consists of:

- a volume descriptor record which contains the information that applies to the logical volume as a whole such as information on the data source, physical volume identification, logical volume identification within the tape or tape set and specifies the number of file pointer records (hence the number of the data files) and text records;

- a file pointer record for each of the files to supply the number and name of the associated data files, the maximum record length and the type and format of the data;

- text record(s) corresponding to the "comment statement" of a computer programme to provide information in human readable form. ESA/EPO uses the text record to specify the product type and processing performed, the location, data and time of product creation, the specific scene identification and the physical tape identification. In CZCS Level 1 case, Standard Header Record in accordance with NASA specified CZCS Radiance and Temperature Tape (CRTT) format is also contained.

(2)The data files which consist of Quicklook File, CRTdata File and Ozonedata File. The Ozone data are additional relevant information, and will not be contained when the data corresponding to the CZCS observation date are not available. The data files are not conformed to the SFF

conventions. The CRTdata and the ozonedata are recorded in accordance with NASA tape format specification. The Ozonedata File contains a file descriptor record, which explains the number of data in the field and contains location of significant data field. But the CRTdata File does not contain a file descriptor record.

(3)A null volume directory file which indicates the end of the logical volume of a volume set (a collection of logical volumes).

1.2 Data organization

The information of ESA/EPO CZCS Level 1 products is organized in one imagery logical volume. The data organization within each logical volume is summarized below and in figure 2.

The Volume directory file usually has 6 records, namely a Volume descriptor and four pointers (for the Quicklook, CRTdata, Ozonedata and Pressure Level files), plus a Text record. However, when the Ozonedata and/or Pressure Level data are not available, the file pointer records for these data are not present. Each record is 360 byte long.

The quicklook file nominally contains 326 records; file descriptor record, catalog record, quicklook processing parameter record and nominally 323 quicklook image records. The catalog record gives useful informations, including data quality information. The quicklook processing parameter record contains informations concerning quicklook image processing parameters. The 323 quicklook image records correspond to one quicklook image.
Each record is 668 bytes long.

The CRTdata File contains nominally 972 records. CRT Documentation Record appears twice as the first and last record. Both records have the same format and the length of 5328 bytes each. The 970(in nominal case) image records correspond to a 2 minutes scene of CZCS. Each record contains one scan line data in the 6 spectral bands, with line quality data, geodetic location data,etc. Each image record is 12780 bytes long. The format of the CRTdata File is the same as the NASA specified CRT tape format(CRTT).

The Ozonedata File contains 184 records; file descriptor record, 180 Ozonedata Records and 4 Trailer Records. Each Ozonedata Record contains total ozone & reflectivity averages and the time of observation (GRIDTOMS data) of one degree latitude zone. The observation day is the same as that of CZCS observation. The 4 trailer records mark the

end of the file. The format of Ozonedata Records and Trailer Records are in accordance with NASA specification. Each record is 1764 bytes long.

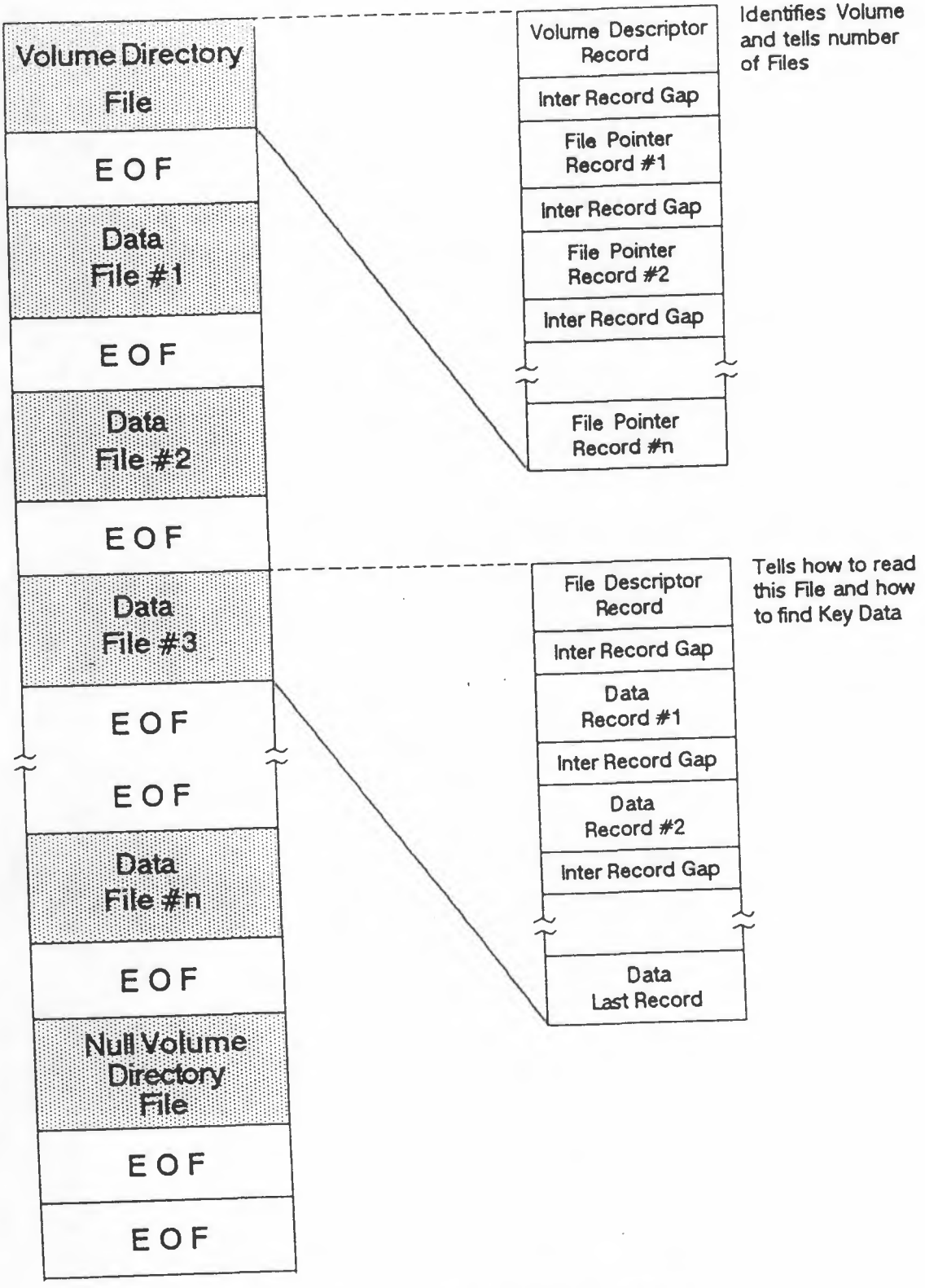
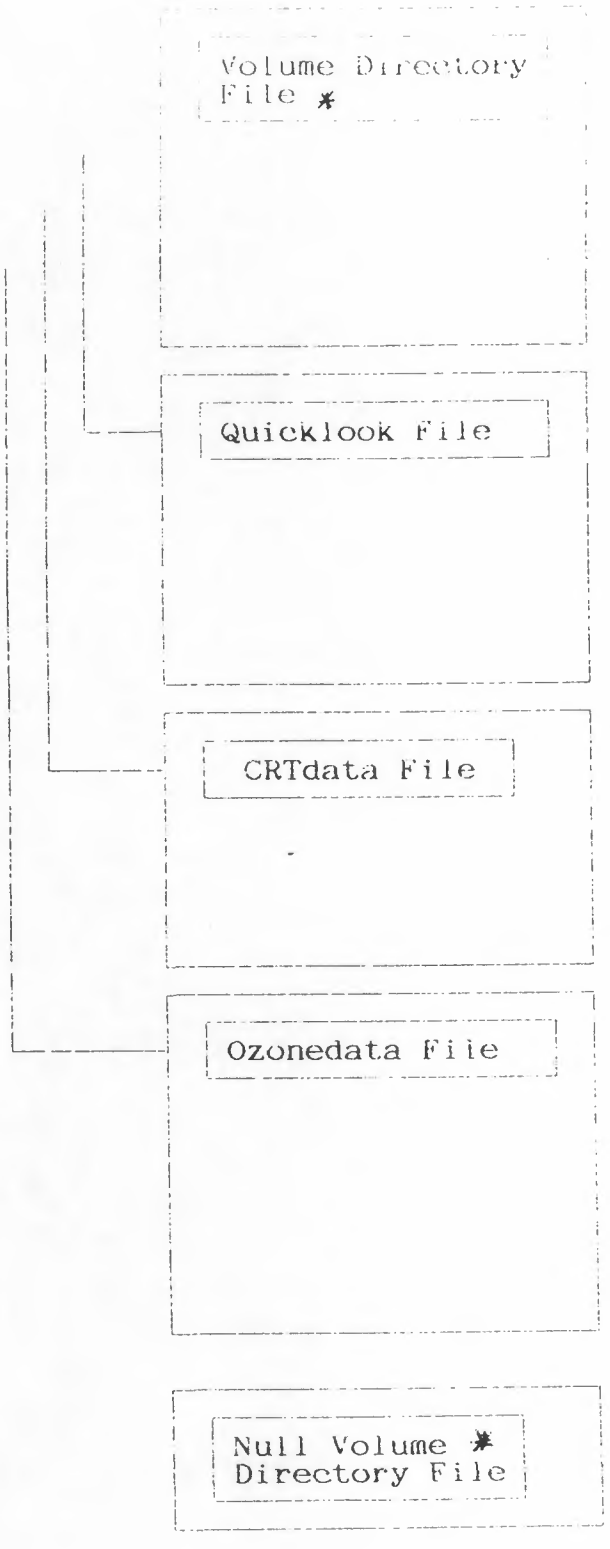


Figure 1: The Standard CCT Format – Overview

figure 2



	Record Length in bytes
Volume Descriptor Record	360
Quicklook File Pointer Record	360
CRTdata File Pointer Record	360
Ozonedata File Pointer Record	360
Text Record	360
File Descripter Record	656 *
Catalog Information Record	656 (1)
Quicklook Processing Parameter Record	656 *
Quicklook Image Record No. 1	656
.	
Quicklook Image Record No. 323	656
CRT Documentation Record	5,328
Image Record No. 1	12,780
.	
Image Record No. n(970)	12,780
CRT Documentation Record	5,328
File Descriptor Record	1,764 *
Ozonedata Record 1(Zone 1)	1,764
.	
Ozonedata Record 180(Zone 180)	1,764
Trailer Record 1	1,764
.	
Trailer Record 4	1,764
Null Volume Descriptor Record	360

* Not present in "tar" Format

(1) CRT.CAT file in "tar" Format

2. Logical volume content description

2.1 Volume Directory File

2.1.1 Volume Descriptor Record

The Volume Directory File nominally contains 5 records of 360 bytes length each.

In the Volume Descriptor Record the most important informations are:

-at field 12, starting at byte 33, the identificator of the software version used to write the logical volume;
-at field 16-19, there are explanations about the physical volumes set;
-at field 21-27, there are explanations about the logical volumes set;
-at field 28, byte 161, there is the number of file pointer records in the Directory File;
-at field 29, bytes 165, there is the total number of records in the Directory File.

2.1.2 File Pointer Record

There are nominally 3 File Pointer Records (Quicklook File, CRTdata File and Ozonedata File) with informations about referenced file, position in the tape, name, class, data type, number and length of records.

2.1.3 Text Record

The last record in the Volume Directory File is a Text Record with the product identification and the scene identifications. The NASA specified Standard Header of CRTT is also recorded from byte 179 to 304.

2.2 Quicklook File

2.2.1 File Descriptor Record

Since all the records except for the file descriptor have no record identification segment, the record code location & field length informations and the record length location & field length informations are not applicable in the fixed segment. the variable segment of the record provides the number and the record length of the catalog information record, Q/L processing parameter record and the Q/L image records. it also contains the format informations of the Q/L image.

2.2.2 Catalog Information Record

The catalog information record contains the useful catalog informations. They are the image identification informations(data aquisition time, geometric location of the image, etc.), the data quality informations(data quality flag, number of bad or missing lines, percentage of water pixels, percentage of Ch.4 saturated water pixels, etc.), and so on.

2.2.3 Q/L processing parameter record

The quicklook processsing parameter record contains the Q/L processing parameters. They are sensitivity decay parameters of CZCS, atmospheric parameters, and so on.

2.2.4 Q/L image record

The processing of Q/L image generation is as follows;
(1) 2 minutes CRT data are 1/3 subsampled.
(2) Each image pixel is classified as ch.4 saturated water pixel, ch.4 not saturated water pixels, land pixels and cloud pixels.
(3) Ch.4 not saturated water pixels are simply atmospheric corrected and converted to sub-surface reflectances. The value of the pixel represents the ratio of sub-surface reflectance of ch.1 to ch.3

One record corresponds to one Q/L image line.

2.3 CRTdata File

2.3.1 CRT Documentation record

CRT Documentation Record appears twice as the first and last records in the CRTdata File. The format of the two documentation records are identical; however,certain data fields (designated by (*) in format description) may not be valid in the first documentation record. The data fields not valid are those data that may not be available, depending upon the processing mode, when the first documentation record is written to the file.
In the CRT Documentation record, important informations are:
-time of the beginning and end of the scene
-number of scans of the scene
-geodetic location of the scene center and the corners
-data quality (number of missing scans, HDT SYNC losses, HDT parity errors, WBVT SYNC losses, WBVT bit slip)
-sensor observation status (gain,threshold,tilt angle)
-scene center time, solar azimuth/elevation, S/C attitude
-tick locations
-slope and intercepts for the conversion of CCT count data to the radiometric unit(mW/cm^2-ster-um)
-temperature conversion table

CRT documentation file also contains the original ephemeris information taken from NASA provided CZCS-ILT (Image Location Tape)

2.3.2 Image Record

Image record contains the following information;
-scan sequence number
-time of the scan
-data quality of the scan (SYNC loss, bit slip,parity error)
-77 anchor point geodetic location
-data values of channel 1 to 6 for one line

2.4 Ozonedata File

2.4.1 File Descriptor Record

Since Ozonedata is recorded in NASA specified format, the record code location & field length information and the record length location & field length information are not applicable in the fixed segment.
The variable segment of this record provides the number of the Ozonedata Records & Trailer Records, the record length of the Ozonedata records & Trailer Records, location & field length of the number of grid cells in the latitude zone, and the location & field length of the number of observations permitted per cell.(See 2.3.2)

2.4.2 Ozonedata Record

The Ozonedata Records contain total ozone and reflectivity averages over the globe which are observed on the same day as that of the CZCS observation. The globe is divided into 1 deg. latitude zones. Each zone is subdivided into cells. The number of cells in a zone varies from 288 at the equator to 72 near the pole, as described in table 1.
A set of avarage values of three quantities (total ozone, reflectivity and the time of observation) for individual orbits, henceforth called the "observational set", is provided for each cell. Additional observation sets are provided for cells poleward of 50 deg. as prescribed in table 1.
The first 20 bytes of each record contain Header information regarding the zone.

2.4.3 Trailer Record

4 trailer records are put to mark the end of the Ozonedata File.

Table 1 Specification for Ozonedata Array

Constant latitude increment of 1.0 deg. from pole to pole(180 zones)

Latitude	Longitude size	Number of cells in zone(N)	Number of observations permitted per cell(M)	Expected Number of orbits per cell	Resolu-tion (km*)
0 -50 deg.	1.25deg.	288	1	1.0 1.6	110*138 110*88.4
50-70 deg.	2.5deg.	144	2	1.6 3.5	110*176 110*94.1
70-80 deg.	5deg.	72	4	3.5 7.3	110*188 110*95.5
80-90 deg.	5deg.	72	4	7.3 14.0	110*95.5 110*0.0

2.5 Null Volume Directory File

This volume contains only the Volume Descriptor record. The structure is the same as the Volume Descriptor record of the Imagery volume.

3. Format description

3.1 Introduction

This chapter describes in details the records within each file of the logical volume. The order of the description follows the order in which the file appears on the tape. Each record is represented as a table consisting of seven columns:

col 1 - name of the field or of the field-group (defined in Annex 2)
col 2 - field-group indicator: 'blank' if single field
'*' if field-group
col 3 - starting byte of the field (or field-group)
col 4 - last byte of the field (or field-group)
col 5 - format in which the data of this field is written (described below)
col 6 - definition and explanation of the content of the field (or field-group)
col 7 - actual content of the field if it is a constant for an ESA/EPO product.

The format described in column 5 is standard Fortran. The main formats used in this product are:

xBn = x times data written in binary form on n bytes (unformatted);
xIn = x times data written as integer values formatted on n digits (e.g., 123 written as 1I4 is: " 123");
xFn.m = x times data written as real numbers on a total of n digits including dot and sign, with m digits for the decimal part (e.g., 123.456 written as 1F10.4 is: +123.4560");
xAn = x strings of n ASCII characters.

3.2 Record table

IMAGERY_VOLUME
VOLUME_DIRECTORY_FILE
VOLUME_DESCRIPTOR_RECORD

field or field-group name		start byte	last byte	format	DESCRIPTION AND EXPLANATION	CONTENT
REC_IDE_SEGM	*	1	16		Record Identification Segment	
1		1	4	B4	Record Sequence Number	1
2		5		B1	File code (according to CEOS)	192
3		6		B1	Record code (according to CEOS)	192
4		7		B1	Mission code (according to CEOS)	18
5		8		B1	Origin code (according to CEOS)	18
6		9	12	B4	Length of this record	360
7		13	14	A2	ASCII/EBCDIC Flag	A$
8		15	16	A2	2 Blanks	$$
VOL_DOC_SEGM	*	17	44		Volume Identification Segment	
9		17	28	A12	Superstructure control document number	CCB-CCT-0002
10		29	30	A2	Superstructure control document revision number <XX> (initially '$C')	$F
11		31	32	A2	Superstructure record format revision letter <XX> (initially '$A',then '$B',ext...)	$A
12		33	44	A12	Software release number: NICZ-001-XXX initially XXX = 001,then 002,etc	
VOL_IDE_SEGM	*	45	172		Volume Identification Segment	
13		45	60	A16	Physical Volume identification: <MNNS$YYDDDHHMM$$> M - mission (B = NIMBUS) NN - mission number (07) S - sensor identification (C = CZCS) YY - year of tape creation(tape copy from O/D) DDD - days of tape creation(tape copy from O/D) HH - hour of tape creation(tape copy from O/D) MM - minutes of tape creation(tape copy from O/D)	
14		61	76	A16	Logical Volume identification: <MNNS$YYDDDHHMM00> M - mission (B = NIMBUS) NN - mission number (07) S - sensor identification (C = CZCS) YY - year of center frame acquisition DDD - days of center frame acquisition HH - hour of center frame acquisition MM - minutes of center frame acquisition	
15		77	92	A16	Volume Set ID	NIMBUS7CZCS$$$
16		93	94	I2	Number of Physical Volumes in the Set	$1
17		95	96	I2	Physical Volume Number, Start of Logical Volume	$1
18		97	98	I2	Physical Volume Number, End of Logical Volume	$1
19		99	100	I2	Physical Volume sequence number (i.e. of current tape)	$1
20		101	104	I4	First Referenced File Number in this Physical	$$$1

				Volume	
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> (tape copy date from O/D)	
24	121	128	A8	Logical Volume Creation Time <HHMMSSXX> (tape copy time from O/D)	
25	129	140	A12	Logical Volume Generating Country (ex. ITALY$$$$$$$)	
26	141	148	A8	Logical Volume Generating Agency (ex. ESA-EPO)	
27	149	160	A12	Logical Volume Generating Facility (ex. ITA-FRASCATI)	
28	161	164	I4	Number of Pointer Records in Volume Directory	
29	165	168	I4	Number of Records in Volume Directory	
30	169	172	I4	Number of Logical Volumes on this Physical Volume	$$$1
31	173	260	A88	Volume Descriptor Spare Segment	Blanks
32	261	360	A100	Local Use Segment	Blanks

IMAGERY_VOLUME
VOLUME_DIRECTORY_FILE
QUICKLOOK_FILE_POINTER_RECORD

field or field-group name		start byte	last byte	format	DESCRIPTION AND EXPLANATION	CONTENT
REC_IDE_SEGM	*	1	16		Record Identification Segment	
1		1	4	B4	Record Sequence Number	2
2		5		B1	File code (according to CEOS)	219
3		6		B1	Record code (according to CEOS)	192
4		7		B1	Mission code (according to CEOS)	18
5		8		B1	Origin code (according to CEOS)	18
6		9	12	B4	Length of this record	360
7		13	14	A2	ASCII/EBCDIC Flag	A$
8		15	16	A2	2 Blanks	$$
FILE_IDE_SEGM	*	17	160		File Identification Segment	
9		17	20	I4	Referenced File Number	$$$1
10		21	36	A16	Referenced File Name	N17$CZCS$Q/LDATA
11		37	64	A28	Referenced File Class	QUICKLOOK$FILE
12		65	68	A4	Referenced File Class Code	QUIC
13		69	96	A28	Referenced File Data Type	MIXED$BINARY$AND
14		97	100	A4	Referenced File Data Type Code	MBAA
15		101	108	I8	Number of Records in Referenced File	$$$$326
16		109	116	I8	Referenced File - Descriptor Record Length	$$$$$656
17		117	124	I8	Referenced File - Maximum Record Length	$$$$$656
18		125	136	A12	Referenced File Record Length Type	FIXED$LENGTH
19		137	140	A4	Referenced File Record Length Type Code	FIXD
20		141	142	I2	Referenced File Physical Volume Number, Start of File	$1
21		143	144	I2	Referenced File Physical Volume Number, End of File	$1
22		145	152	I8	Referenced File Portion, 1st Record Number for this Physical Volume	$$$$$$$1
23		153	260	A108	Pointer Spare Segment	Blanks
24		261	360	A100	Local Use Segment	Blanks

IMAGERY_VOLUME
VOLUME_DIRECTORY_FILE
CRTDATA_FILE_POINTER_RECORD

field or field-group name		start byte	last byte	format	DESCRIPTION AND EXPLANATION	CONTENT
REC_IDE_SEGM	*	1	16		Record Identification Segment	
1		1	4	B4	Record Sequence Number	3
2		5		B1	File code (according to CEOS)	219
3		6		B1	Record code (according to CEOS)	192
4		7		B1	Mission code (according to CEOS)	18
5		8		B1	Origin code (according to CEOS)	18
6		9	12	B4	Length of this record	360
7		13	14	A2	ASCII/EBCDIC Flag	A$
8		15	16	A2	2 Blanks	$$
FILE_IDE_SEGM	*	17	160		File Identification Segment	
9		17	20	I4	Referenced File Number	$$$2
10		21	36	A16	Referenced File Name	NI7$CZCS$CRTDATA
11		37	64	A28	Referenced File Class	IMAGERY$FILE
12		65	68	A4	Referenced File Class Code	IMGY
13		69	96	A28	Referenced File Data Type	BINARY$ONLY
14		97	100	A4	Referenced File Data Type Code	BINO
15		101	108	I8	Number of Records in Referenced File	
16		109	116	I8	Referenced File - Documentation Records Length	$$$$5328
17		117	124	I8	Referenced File - Data Records Length	$$$12780
18		125	136	A12	Referenced File Record Length Type	VARIA$LENGTH
19		137	140	A4	Referenced File Record Length Type Code	VRBL
20		141	142	I2	Referenced File Physical Volume Number, Start of File	$1
21		143	144	I2	Referenced File Physical Volume Number, End of File	$1
22		145	152	I8	Referenced File Portion, 1st Record Number for this Physical Volume	$$$$$$$1
23		153	260	A108	Pointer Spare Segment	Blanks
24		261	360	A100	Local Use Segment	Blanks

IMAGERY_VOLUME
VOLUME_DIRECTORY_FILE
OZONEDATA_FILE_POINTER_RECORD

field or field-group name		start byte	last byte	format	DESCRIPTION AND EXPLANATION	CONTENT
REC_IDE_SEGM	*	1	16		Record Identification Segment	
1		1	4	B4	Record Sequence Number	4
2		5		B1	File code (according to CEOS)	219
3		6		B1	Record code (according to CEOS)	192
4		7		B1	Mission code (according to CEOS)	18
5		8		B1	Origin code (according to CEOS)	18
6		9	12	B4	Length of this record	360
7		13	14	A2	ASCII/EBCDIC Flag	A$
8		15	16	A2	2 Blanks	$$
FILE_IDE_SEGM	*	17	160		File Identification Segment	
9		17	20	I4	Referenced File Number	$$$3
10		21	36	A16	Referenced File Name	N17$CZCS$OZONEDT
11		37	64	A28	Referenced File Class	OZONEDATA$FILE
12		65	68	A4	Referenced File Class Code	OZON
13		69	96	A28	Referenced File Data Type	BINARY$ONLY
14		97	100	A4	Referenced File Data Type Code	BINO
15		101	108	I8	Number of Records in Referenced File	$$$$$185
16		109	116	I8	Referenced File - Descriptor Record Length	$$$$1764
18		117	124	I8	Referenced File Maximum Record Length	$$$$1764
19		125	136	A12	Referenced File Record Length Type	FIXED$LENGTH
20		137	140	A4	Referenced File Record Length Type Code	FIXD
21		141	142	I2	Referenced File Physical Volume Number, Start of File	$1
22		143	144	I2	Referenced File Physical Volume Number, End of File	$1
23		145	152	I8	Referenced File Portion, 1st Record Number for this Physical Volume	$$$$$$$1
24		153	260	A108	Pointer Spare Segment	Blanks
25		261	360	A100	Local Use Segment	Blanks

IMAGERY_VOLUME
VOLUME_DIRECTORY_FILE
TEXT_RECORD

field or field-group name		start byte	last byte	format	DESCRIPTION AND EXPLANATION	CONTENT
REC_IDE_SEGM	*	1	16		Record Identification Segment	
1		1	4	B4	Record Sequence Number	5
2		5		B1	File code (according to CEOS)	18
3		6		B1	Record code (according to CEOS)	63
4		7		B1	Mission code (according to CEOS)	18
5		8		B1	Origin code (according to CEOS)	18
6		9	12	B4	Length of this record	360
7		13	14	A2	ASCII/EBCDIC flag for this record	A$
8		15	16	A2	Continuation flag. This field contains two blanks unless the information of this record continues on a following record, in which case the field is coded C$.	$$
9		17	66	A50	Product identification: PRODUCT:NIMBUSNNCZCS$CRT$$$$$$$$$$$$$$$$$$$$$$$$<CrLf>	
10		67	124	A58	Location and date/time of product creation: (ex. PROCESSED:$$ITALY$$$$$$$$ESA-EPOONYYYYMMDDATHHMMSS$$$<CrLf>) HH - Hour of creation MM - Minutes of creation SS - Seconds of creation	
11		125	148	A24	Tape identification: TAPEID:$MNNS$YYDDDHHMM<CrLf> M - mission ID (B=NIMBUS) NN - mission number (07) S - sensor (C = CZCS) YY - year of creation DDD - days of creation HH - GMT hour at time of creation MM - GMT minute at time of creation	
12		149	178	A30	Scene identification: SCENE$$:$MNNS$YYDDDHHMMSSmmm<CrLf> M - mission ID (B=NIMBUS) NN - mission number (07) S - sensor (C=CZCS) YY - year of scene acquisition DDD - day year of scene acquisition (001-366) HH - hour of scene acquisition (00-23) MM - minutes of scene acquisition (00-59) SS - seconds of scene acquisition (00-59) mmm - milliseconds of scene acquisition (000-999)	
STD_HDR	*	179	304		Standard Header Record reported	
13		179	202	A24	Product identification: $NIMBUS-7$NOPS$SPEC$NO$T	
14		203	208	A6	Specification numbering code X - Subsystem (7 for CZCS) X - Source Facility (same as Destination Facility)	

X - Destination Facility (ex. 9 for Lannion)
XX - Tape number in sequence for subsystem
X - Tape description (ex. 1 for 9 track 1600 bpi)

15	209	215	A7	PDFC Designator: SQNO$
16	216	222	A7	Sequence number: AAXXXXX
17	223	224	A2	Tape copy number: -X (X = 1 or 2)
18	225	230	A6	Subsystem ID: $YYYY$
19	231	234	A4	Generation Facility ID: YYYY
20	235	242	A8	Destination Facility ID: TOYYYY
21	243	265	A23	Start date and time of data: $START$19XXDDDHHMMSS$
22	266	284	A19	End date and time of data: TO$19XX$DDD$HHMMSS$
23	285	304	A20	Date and time tape was generated: GEN$19XX$DDD$HHMMSS$
24	305	360	A56	Blanks

IMAGERY_VOLUME
QUICKLOOK_FILE
CATALOG_INFORMATION_RECORD

field or field-group name	start byte	last byte	format	DESCRIPTION AND EXPLANATION	CONTENT
1	1	6	A6	Equator Crossing Longitude (degree ; 0 to 360 eastward)	XXX.XX
2	7		A1	Blank	$
3	8	12	A5	Orbit Number	XXXXX
4	13		A1	Blank	$
5	14	19	A6	Aquisition Date (YYMMDD)	XXXXXX
6	20		A1	Blank	$
7	21	26	A6	Equator Crossing Time (HHMMSS)	XXXXXX
8	27		A1	Blank	$
9	28	33	A6	Image Start Time (HHMMSS)	XXXXXX
10	34		A1	Blank	$
11	35	40	A6	Image Stop Time (HHMMSS)	XXXXXX
12	41		A1	Blank	$
13	42		A1	Quick Look OK Status (Y = yes, N = no)	X
14	43		A1	Blank	$
15	44	46	A3	Percentage of Water in band 5 image	XXX
16	47		A1	Blank	$
17	48	50	A3	Percentage of Saturated Water in band 4 image	XXX
18	51		A1	Blank	$
19	52		A1	Data Quality Flag(*)	X
20	53		A1	Blank	$
21	54	56	A3	Number of Bad or Missing Lines	XXX
22	57		A1	Blank	$
23	58	63	A6	NW Corner Latitude of Q/L Image (degree)	XXX.XX
24	64		A1	Blank	$
25	65	71	A7	NW Corner Longitude of Q/L Image (degree ; 0 to 360 eastward)	XXXX.XX
26	72		A1	Blank	$
27	73	78	A6	SW Corner Latitude of Q/L Image (degree)	XXX.XX
28	79		A1	Blank	$
29	80	86	A7	SW Corner Longitude of Q/L Image (degree ; 0 to 360 eastward)	XXXX.XX
30	87		A1	Blank	$
31	88	93	A6	SE Corner Latitude of Q/L Image (degree)	XXX.XX
32	94		A1	Blank	$
33	95	101	A7	SE Corner Longitude of Q/L Image (degree ; 0 to 360 eastward)	XXXX.XX
34	102		A1	Blank	$
35	103	108	A6	NE Corner Latitude of Q/L Image (degree)	XXX.XX
36	109		A1	Blank	$
37	110	116	A7	NE Corner Longitude of Q/L Image (degree ; 0 to 360 eastward)	XXXX.XX
38	117		A1	Blank	$
39	118	123	A6	Latitude of Q/L Image Center (degree)	XXX.XX
40	124		A1	Blank	$

IMAGERY_VOLUME
QUICKLOOK_FILE
FILE_DESCRIPTOR_RECORD

field or field-group name		start byte	last byte	format	DESCRIPTION AND EXPLANATION	CONTENT
REC_IDE_SEGM	*	1	16		Record Identification Segment	
1		1	4	B4	Record Sequence Number	1
2		5		B1	File Code (according to CEOS definition)	63
3		6		B1	Record Code (according to CEOS definition)	192
4		7		B1	Mission Code (according to CEOS definition)	18
5		8		B1	Origin Code (according to CEOS definition)	18
6		9	12	B4	Length of this record	656
7		13	14	A2	ASCII/EBCDIC Flag	A$
8		15	16	A2	2 Blanks	$$
FDR_FIXED_SEGM	*	17	180		FILE DESCRIPTOR RECORD FIXED SEGMENT	
9		17	28	A12	Control Document Number for this Data File Format	NICZ-001-001
10		29	30	A2	Control Document Revision Number <XX>,where XX='$A', etc.	$A
11		31	32	A2	File Design Descriptor Revision Letter <XX>, (Initially '$A',then '$B',etc.)	$A
12		33	44	A12	Software Release Number NICZ-001-XXX, initially XXX=001,then 02,etc.	NICZ-001-001
13		45	48	I4	File Number	$$$1
14		49	64	A16	File Name	NI7$CZCS$Q/LDATA
15		65	68	A4	Record Sequence and Location Type Flag	FSEQ
16		69	76	I8	Sequence Number Location -n/a	
17		77	80	I4	Sequence Number Field Length -n/a	
18		81	84	A4	Record Code and Location Type Flag -n/a	
19		85	92	I8	Record Code Location -n/a	
20		93	96	I4	Record Code Field Length -n/a	
21		97	100	A4	Record Length and Location Type Flag -n/a	
22		101	108	I8	Record Length Location -n/a	
23		109	112	I4	Record Length Field Length -n/a	
24		113		A1	Flag indicating that data interpretation information is included within the file descriptor record. <X> ,where X=Y OR N ,for YES or NO	Y
25		114		A1	Flag indicating that data interpretation information is included within the file in record(s) other than the descriptor <X> ,where X=Y OR N ,for YES or NO	N
26		115		A1	Flag indicating that data display information is included within the file descriptor record. <X> ,where X=Y OR N ,for YES or NO	Y
27		116		A1	Flag indicating that data display information is included within the file in record(s) other	N

				than the file descriptor.	
				<X> ,where X=Y OR N ,for YES or NO	
28		117	180	Reserved Segment	Blanks
FDR_VARIA_SEGM	*	181	668	FILE DESCRIPTOR RECORD VARIABLE SEGMENT	
29		181	186	I6 Number of Catalog Information Records	$$$$$1
30		187	192	I6 Number of Q/L Processing Parameter Records	$$$$$1
31		193	198	I6 Number of Q/L Image Records	
32		199	204	I6 Catalog Information Record Length	$$$656
33		205	210	I6 Q/L Processing Parameter Record Length	$$$656
34		211	216	I6 Q/L Image Record Length	$$$656
35		217	232	Blanls	Blanks
QL_IMA_PAR	*	233	272	Q/L IMAGE PARAMETER	
36		233	236	I4 Number of bands of imagery in the Q/L image	$$$1
37		237	244	I8 Number of lines per Q/L image	
				(one Q/L image record contains one line of Q/L image)	
38		245	248	I4 Number of left border pixels	$$$0
39		249	256	I8 Number of Q/L image pixels per line	$$$$$656
40		257	260	I4 Number of right border pixels	$$$0
41		261	264	I4 Number of top border lines	$$$0
42		265	268	I4 Number of bottom border lines	$$$0
43		269	272	A4 Interleaving indicator -n/a	
QL_REC_PAR	*	273	296	Q/L RECORD PARAMETER	
44		273	274	I2 Number of physical records per line	$1
45		275	276	I2 Number of physical records per multispectral	$1
				line in the Q/L image records -n/a	
46		277	280	I4 Number of bytes of prefix data per record -n/a	
47		281	288	I8 Number of bytes of image data per Q/L image	$$$$$656
				record	
48		289	292	I4 Number of bytes of suffix data per record -n/a	
49		293	296	I4 Prefix/suffix repeat flag -n/a	
50		297	464	Blanks	Blanks
QL_IMA_DESC	*	465	484	Q/L IMAGE DESCRIPTION	
51		465	468	I4 Number of bands per line	$$$1
				Q/L Image Pixel Group Data	
52		469	472	I4 Number of bits per pixel	$$$8
53		473	476	I4 Number of pixel per data group	$$$1
54		477	480	I4 Number of bytes per data group	$$$1
55		481	484	A4 Justification and order of pixels within data	RJLR
				group	
QL_IMA_PXL_DESC	*	485	516	Q/L Image Pixel Data Description	
56		485	488	I4 Number of left fill bits within pixel	$$$0
57		489	492	I4 Number of right fill bits within pixel	$$$0
58		493	500	I8 Maximum data range of pixel values #	$$$$$63
59		501	508	A8 Left fill pixel bit data description -n/a	$$$$$$$$
60		509	516	A8 Right fill pixel bit data description -n/a	$$$$$$$$

data range 0 to 54 : CZCS band 2 water pixels

(simplified atmospheric correction applied)

data value 55 : CZCS band 4 saturated water pixels
data range 56 to 59 : land pixels derived from CZCS band 5
data range 60 to 63 : cloud pixels derived from CZCS band 5

61		517	656	Blanks	Blanks

IMAGERY_VOLUME
QUICKLOOK_FILE
CATALOG_INFORMATION_RECORD

field or field-group name	start byte	last byte	format	DESCRIPTION AND EXPLANATION	CONTENT
1	1	6	A6	Equator Crossing Longitude (degree ; 0 to 360 eastward)	XXX.XX
2	7		A1	Blank	$
3	8	12	A5	Orbit Number	XXXXX
4	13		A1	Blank	$
5	14	19	A6	Aquisition Date (YYMMDD)	XXXXXX
6	20		A1	Blank	$
7	21	26	A6	Equator Crossing Time (HHMMSS)	XXXXXX
8	27		A1	Blank	$
9	28	33	A6	Image Start Time (HHMMSS)	XXXXXX
10	34		A1	Blank	$
11	35	40	A6	Image Stop Time (HHMMSS)	XXXXXX
12	41		A1	Blank	$
13	42		A1	Quick Look OK Status (Y = yes, N = no)	X
14	43		A1	Blank	$
15	44	46	A3	Percentage of Water in band 5 image	XXX
16	47		A1	Blank	$
17	48	50	A3	Percentage of Saturated Water in band 4 image	XXX
18	51		A1	Blank	$
19	52		A1	Data Quality Flag(*)	X
20	53		A1	Blank	$
21	54	56	A3	Number of Bad or Missing Lines	XXX
22	57		A1	Blank	$
23	58	63	A6	NW Corner Latitude of Q/L Image (degree)	XXX.XX
24	64		A1	Blank	$
25	65	71	A7	NW Corner Longitude of Q/L Image (degree ; 0 to 360 eastward)	XXXX.XX
26	72		A1	Blank	$
27	73	78	A6	SW Corner Latitude of Q/L Image (degree)	XXX.XX
28	79		A1	Blank	$
29	80	86	A7	SW Corner Longitude of Q/L Image (degree ; 0 to 360 eastward)	XXXX.XX
30	87		A1	Blank	$
31	88	93	A6	SE Corner Latitude of Q/L Image (degree)	XXX.XX
32	94		A1	Blank	$
33	95	101	A7	SE Corner Longitude of Q/L Image (degree ; 0 to 360 eastward)	XXXX.XX
34	102		A1	Blank	$
35	103	108	A6	NE Corner Latitude of Q/L Image (degree)	XXX.XX
36	109		A1	Blank	$
37	110	116	A7	NE Corner Longitude of Q/L Image (degree ; 0 to 360 eastward)	XXXX.XX
38	117		A1	Blank	$
39	118	123	A6	Latitude of Q/L Image Center (degree)	XXX.XX
40	124		A1	Blank	$

41	125	131	A7	Longitude of Q/L Image Center (degree ; 0 to 360 eastward)	XXXX.XX
42	132		A1	Blank	$
43	133	135	A3	Percentage of Band 5 Water Pixels in NW Quadrant	XXX
44	136		A1	Blank	$
45	137	139	A3	Percentage of Band 5 Water Pixels in SW Quadrant	XXX
46	140		A1	Blank	$
47	141	143	A3	Percentage of Band 5 Water Pixels in SE Quadrant	XXX
48	144		A1	Blank	$
49	145	147	A3	Percentage of Band 5 Water Pixels in NE Quadrant	XXX
50	148		A1	Blank	$
51	149	151	A3	Percentage of Band 4 Saturated Water Pixels in NW Quadrant	XXX
52	152		A1	Blank	$
53	153	155	A3	Percentage of Band 4 Saturated Water Pixels in SW Quadrant	XXX
54	156		A1	Blank	$
55	157	159	A3	Percentage of Band 4 Saturated Water Pixels in SE Quadrant	XXX
56	160		A1	Blank	$
57	161	163	A3	Percentage of Band 4 Saturated Water Pixels in NE Quadrant	XXX
58	164		A1	Blank	$
59	165	178	A14	Archived Optical Disk Reference Number	XXXXXXXXXXXXXX
60	179		A1	Blank	$
61	180	185	A6	Tilt Angle (degree)	XXX.XX
62	186		A1	Blank	$
63	187		A1	Gain (1,2,3 or 4)	X
64	188		A1	Blank	$
65	189	195	A7	Sun Azimuth of Frame Center (degree)	XXXX.XX
66	196		A1	Blank	$
67	197	203	A7	Sun Zenith of Frame Center (degree)	XXXX.XX
68	204		A1	Blank	$
69	205		A1	Product Level (1 = Level 1 CRT)	X
70	206		A1	Blank	$
71	207	208	A2	Station Code	XX
72	209	656		Blanks	Blanks

(*) At present, data quality field is filled with 0. The definition of this field will be decided later.

IMAGERY_VOLUME
QUICKLOOK_FILE
QUICKLOOK_PROCESSING_PARAMETER_RECORD

field or field-group name	start byte	last byte	format	DESCRIPTION AND EXPLANATION	CONTENT
1	1	12	A12	Algorithm ID Number QUICKLOOK$<XX>, where XX = 01, then 02, etc.	
2	13	24	F12.6	Rayleigh Optocal Thickness of Band 1	0.2101
3	25	36	F12.6	Rayleigh Optocal Thickness of Band 2	0.1125
4	37	48	F12.6	Rayleigh Optocal Thickness of Band 3	0.0903
5	49	60	F12.6	Rayleigh Optocal Thickness of Band 4	0.0415
6	61	72	F12.6	Ozone Optical Thickness of Band 1	0.0068
7	73	84	F12.6	Ozone Optical Thickness of Band 2	0.0213
8	85	96	F12.6	Ozone Optical Thickness of Band 3	0.0346
9	97	108	F12.6	Ozone Optical Thickness of Band 4	0.0202
10	109	120	F12.6	Extraterrestrial Solar Irradiance of Band 1 (uW/cm^2*nm)	186.42
11	121	132	F12.6	Extraterrestrial Solar Irradiance of Band 2	185.34
12	133	144	F12.6	Extraterrestrial Solar Irradiance of Band 3	184.76
13	145	156	F12.6	Extraterrestrial Solar Irradiance of Band 4	151.52
14	157	168	F12.6	Sensitivity Decay Parameter 1 of Band 1 (a)	1.023
15	169	180	F12.6	Sensitivity Decay Parameter 1 of Band 2	0.951
16	181	192	F12.6	Sensitivity Decay Parameter 1 of Band 3	0.942
17	193	204	F12.6	Sensitivity Decay Parameter 1 of Band 4	1.000
18	205	216	F12.6	Sensitivity Decay Parameter 2 of Band 1 ($b*10^5$)	1.908
19	217	228	F12.6	Sensitivity Decay Parameter 2 of Band 2	0.793
20	229	240	F12.6	Sensitivity Decay Parameter 2 of Band 3	0.491
21	241	252	F12.6	Sensitivity Decay Parameter 2 of Band 4	0.000
22	253	264	F12.6	Sensitivity Decay Parameter 3 of Band 1 ($c*10^{10}$)	-0.556
23	265	276	F12.6	Sensitivity Decay Parameter 3 of Band 2	-0.386
24	277	288	F12.6	Sensitivity Decay Parameter 3 of Band 3	-0.211
25	289	300	F12.6	Sensitivity Decay Parameter 3 of Band 4	0.000
26	301	656		Blanks	Blanks

IMAGERY_VOLUME
QUICKLOOK_FILE
QUICKLOOK_IMAGE_RECORD

field or field-group name	start byte	last byte	format	DESCRIPTION AND EXPLANATION	CONTENT
1	1	656	656B1	Quicklook Image Data of 1 line (= 656 pixels)	

IMAGERY_VOLUME
CRTT_DATA_FILE
CRTT_DOCUMENTATION_RECORD

Field or Field Group Name	Start Byte	Last Byte	Format	Description and Explanation	Content
1	1	2		Physical Record Number (MSB 12 bits;binary integer) and Spares(LSB 4 bits; set to 0)	
2	3			File Control (MSB 2 bits) The MSB(Bit1) will be set to 1 to indicate the last record written in a file. Record I.D. (LSB 6 bits;binary integer) 1 = leading documentation file 2 = trailing documentation file	
3	4		B1	Valid Data Flag 0(all bits off) = data is invalid 255(all bits on) = data is valid	
4	5	7	3B1	Target Area Code Each code will describe a target area which was covered by the data in the file.	
5	8		B1	File Number contained in the tape according to NASA tape format	
6	9	12	B4	Tape Sequence Number contained in NASA Standard Header Record	
7	13	16	B4	Film Frame Number	
8	17	18	B2	Starting Year Number For example,1978	
9	19	20	B2	Starting GMT Day Number Starts at 1 on Jan.1 and increments by 1 for each day of the year (1 to 366)	
10	21	24	B4	Starting Time in Milliseconds GMT. This number is in milliseconds of the GMT,and for the start of the CRTT data file	
11	25	28	B4	Increment in Milliseconds from the start time of the segment to the last data scan of the segment. (*)	
12	29	30	B2	Orbit Number	
13	31	32	B2	Number of Scans in File (*)	
14	33	34	B2	Geodetec Latitude Center ranging from 0 at the south pole to 18000(180 deg.*100) at the north pole (LSB weight is 0.01 deg) (*)	
15	35	36	B2	Longitude Center from 0 at the Greenwich Meridian eastward to 36000 (360 deg.*100) (LSB weight is 0.01 deg) (*)	
16	37	38	B2	Geodetic Latitude of Corner(left of truck,first in time), with scaling identical to field 14.	
17	39	40	B2	Longitude of Corner (left of truck,first in time), with scaling identical to field 15.	
18	41	42	B2	Geodetic Latitude of Corner(right of truck,first in time), with scaling identical to field 14.	
19	43	44	B2	Longitude of Corner (right of truck,first in time), with scaling identical to field 15.	
20	45	46	B2	Geodetic Latitude of Corner(left of truck,last	

				in time), with scaling identical to field 14.(*)
21	47	48	B2	Longitude of Corner (left of truck,last in time) with scaling identical to field 15. (*)
22	49	50	B2	Geodetic Latitude of Corner(right of truck,last in time), with scaling identical to field 14.(*)
23	51	52	B2	Longitude of Corner (right of truck,last in time) with scaling identical to field 15. (*)
24	53			ILT FLAGS Bit 1(MSB) 0 = at least one set of data not available 1 = all relevant data available Bit 2 1 = time corrections available Bit 3 1 = solar ephemeris available Bit 4 1 = data quality loss available Bit 5 1 = VIP data available Bit6-7 00 = spacecraft ephemeris not available 01 = spacecraft ephemeris predicteve 11 = spacecraft ephemeris definitive Bit 8 1 = rate coefficients available
25	54			Parameter Presence Code Bit 1(MSB) 1 = Ch.1 data is present 0 = Ch.1 data is absent Bit 2 1 = Ch.2 data is present 0 = Ch.2 data is absent Bit 3 1 = Ch.3 data is present 0 = Ch.3 data is absent Bit 4 1 = Ch.4 data is present 0 = Ch.4 data is absent Bit 5 1 = Ch.5 data is present 0 = Ch.5 data is absent Bit 6 1 = Ch.6 data is present 0 = Ch.6 data is absent Bit 7-8 Spare 0
26	55	56	B2	Number of Missing Scans (*)
27	57	58	B2	Number of Scans Missing Ch.1 data (*)
28	59	60	B2	Number of Scans Missing Ch.2 data (*)
29	61	62	B2	Number of Scans Missing Ch.3 data (*)
30	63	64	B2	Number of Scans Missing Cn.4 data (*)
31	65	66	B2	Number of Scans Missing Ch.5 data (*)
32	67	68	B2	Number of Scans Missing Ch.6.data (*)
33	69		B1	Algorithm I.D.Number of Ch.1 Calibration
34	70		B1	Algorithm I.D.Number of Ch.2 Calibration
35	71		B1	Algorithm I.D.Number of Ch.3 Calibration
36	72		B1	Algorithm I.D.Number of Ch.4 Calibration
37	73		B1	Algorithm I.D.Number of Ch.5 Calibration
38	74		B1	Algorithm I.D.Number of Ch.6 Calibration
39	75		B1	Algorithm I.D.Number of Geographic Location
40	76		B1	Undefined
41	77	80	B4	Decom Run Number
42	81	84	B4	Decom Reel Number
43	85	86	B2	Number of HDT Sync Losses occered reading 2 minutes period of the HDT tape (*)

44	87	88	B2	Number of HDT Parity Errors detected on the HDT tape during the 2 minutes period. (*)	
45	89	90	B2	Number of WBVT Sync Losses detected by the pre-processor during generation of 2 minutes period of HDT tape. (*)	
46	91	92	B2	Number of WBVT Bit Slip Occurences detected by the pre-processor during generation of 2 minutes period of HDT tape. (*)	
47	93	156	32B2	Sub-Commutated 32 Housekeeping Data,scaled with 8 fractional bits	
48	157			Spare	0
49	158			Base Plate Temperature Flag 0(all bits off) = baseplate temperature is a normal preset value 255(all bits on) = temperature is obtained from the ILT	
50	159	160	B2	Baseplate Temperature This data has a fractional part of 7 bits.	
51	161	696		Spares	Blanks
52	697		B1	CZCS gain setting A binary integer value of 1,2,3 or 4	
53	698		B1	CZCS Threshold Function Status 1 = off, 2 = on	
54	699	700	B2	CZCS Tilt Angle Two's complement integer,with LSB weight of 1/1000 deg.	
55	701	702	B2	The year(4 digit) associated with the geographic scene center. (*)	
56	703	704	B2	Scene Center Day of Year (1 to 366) (*)	
57	705	708	B4	The Milliseconds of Day associated with the geographic center of the scene(0 to 86399999) (*)	
58	709	710	B2	Solar Elevation at the Geographic Scene Center Values range from -90 to +90 deg.,represented by two's complement integer,with LSB weight of 1/100 deg. (*)	
59	711	712	B2	Solar Azimuth at the Geographic Scene Center Values range from 0 to 360 deg. Unsigned binary integer,with LSB weight 1/100 deg. (*)	
60	713	718	3B2	The Spacecraft Attitude(Roll,Pitch and Yaw) at the Geographic SCENE Center. Values range from -32 to +32 deg.,represented by two's complement integer,with LSB weight of 1/1000 deg. (*)	
61	719		B1	Tick Label Flag for the Top/Bottom Edges (*) 1 = tick labels are latitude 2 = tick labels are longitude	
62	720		B1	Tick Labe Flag for the Left/Right Edges (*) 1 = tick labels are latitude 2 = tick labels are longitude	
63	721	722	B2	Latitude of Top Left Tick Label Values range from 0 deg. at the south pole to 180 deg. at the north pole. Unsigned binary integer,with LSB weight of	

				1/100 deg. (*)
64	723	724	B2	Latitude of Top Right Tick Label (*)
65	725	726	B2	Latitude of Bottom Left Tick Label (*)
66	727	728	B2	Latitude of Bottom Right Tick Label (*)
67	729	730	B2	Longitude of Left Top Tick Label Values range from 0 to 360 deg.eastward. Unsigned binary integer,with LSB weight of 1/100 deg. (*)
68	731	732	B2	Longitude of Left Bottom Tick Label (*)
69	733	734	B2	Longitude of Right Top Tick Label (*)
70	735	736	B2	Longitude of Right Bottom Tick Label (*)
71	737		B1	Top Tick Increments in degrees between succe- ssive ticks on each edge of the scene. Values may be 1,2,4 or 8 deg. Unsigned binary integers,with LSB weight of 1 deg. (*)
72	738		B1	Bottom Tick Increments (*)
73	739		B1	Left Tick Increments (*)
74	740		B1	Right Tick Increments (*)
75	741	794	27B2	Top Tick Location Arrays The location of the first tick is specified relative to the left end of the edge; the location of succeeding tick is specified relative to the position of the preceeding tick. Values are unsigned binary integers,representing numbers of pixels. (*)
76	795	848	27B2	Bottom Tick Location Arrays (*)
77	849	902	27B2	Left Tick Location Arrays The location of the first tick is specified relative to the top end of the edge; the location of succeeding tick is specified relative to the position of the proceeding tick. Values are unsigned binary integers, representing numbers of scan lines.
78	903	956	27B2	Right Tick Location Arrays
79	957	964	2B4	Slope and Intercept of Ch.1 for the conversion of the ch.1 data to radiometric units (mw/cm**2-ster-um) Signed and 7 bits whole part and 24 bits fra- ctional.
80	965	972	2B4	Spope and Intercept of Ch.2
81	973	980	2B4	Slops and Intercept of Ch.3
82	981	988	2B4	Slope and Intercept of Ch.4
83	989	996	2B4	Slope and Intercept of Ch.5
84	997	1004	2B4	Slope and Intercept of Ch.6
85	1005	1516	256B2	Temperature Conversion Table Contains the temperature in degrees Celsius for the corresponding count of ch.6 data. This data has 8 bits whole part and 8 bits fractional part.
86	1517	1520	2B2	Image Enhancement Slope and Intercept of Ch.1 for display purpose, represented by two's complement integers. LSB weights are 1/256 for slopes and 1/16 for

				intercepts.	
87		1521	1524	2B2	Image Enhancement Slope and Intercept of Ch.2
88		1525	1528	2B2	Image Enhancement Slope and Intercept of Ch.3
89		1529	1532	2B2	Image Enhancement Slope and Intercept of Ch.4
90		1533	1536	2B2	Image Enhancement Slope and Intercept of Ch.5
91		1537	1540	2B2	Image Enhancement Slope and Intercept of Ch.6
92		1541	1548		Spares Blanks
ILT_TYPA_SEGM	*	1549	5328		CZCS ILT Type A Record
93		1549	1550		Physical Record Number(MSB 12 bits) and Spares (set to 0)
94		1551			Record I.D. Bit 1(MSB)-2 File Status Bit Bit 3-8 01 = Type A data record 02 = Data quality loss record 03 = Type A dummy record 11 = Tppe B data record(SOBV/TOMS) 13 = Type B dummy record 06 = Type D data record(SAM II) 31 = Time correction record
95		1552	1554	B3	Data Orbit Number
96		1555		B1	GMT Year (last 2 digits only) corresponding to the data contained in item 101 thru 113
97		1556	1557	B2	GMT Start Time of Year expressed in units of 2 hours(1/12 of a day) corresponding the data contained in item 101 thru 113
98		1558	1560	B3	GMT Start Milliseconds of 1/12 day corresponding the data contained in item 101 thru 113
99		1561	1563	B3	Spacecraft Time given in 1/12 days to be added to spacecraft time to get the corresponding spacecraft time for the associated data in item 101 thru 113. (MSB will be used as the sign bit)
100		1564	1566	B3	Spacecraft Clock Time in milliseconds to be added to spacecraft 1/12 days above to get the corresponding time for the associated data in item 101 thru 113. (MSB will be used as the sign bit)
101		1567	1569	B3	X co-ordinate of spacecraft location (in earth centered inertial co-ordinates true of date) Expressed in meters.
102		1570	1572	B3	Y co-ordinate of spacecraft location
103		1573	1575	B3	Z co-ordinate of spacecraft location
104		1576	1578	B3	Greenwich Hour Angle from Aries The angle between the inertial X-axis and the earth fixed x-axis,expressed in 10^{-6} radians.
105		1579	1581	B3	The X-component of the spacecraft velocity in km/second scaled by 2^{18}. The MSB will be used as the sign bit.
106		1582	1584	B3	The Y-component of the spacecraft velocity
107		1585	1587	B3	The Z-component of the spacecraft velocity
					If S/C ephemeris data is not available,each 24bits of items 101 thru 107 will be left at its initial

value of 5777777777_8.

108	1588	1593	B6	Sun Right Ascension(Azimuth) The angle measured in the plane of the equator from vernal equinox to a plane normal to the equator containing the sun(true of date) and positive counterclockwise as seen from +Z(north pole). Expressed as two 24 bit words. The first 24 bits(X1) will be radians scaled by 221. The second 24 bit(x2) word will be radians scaled by 229. To get 29 bit precision, Y let Y = X1+x2 if X1>0 ; Y = X1-X2 if X1<0 If solar ephemeris data is not available, each 24 bits is left at its initial value=5777777777_8
109	1594	1599	B6	Sun Declination(Elevation) The angle between the sun and the inertial equator measureed in a plane normal to the inertial equator containing the sun and the earth center (true of date), positive above equator. Same scaling as item 107. If solar ephemeris data is not available, each 24 bits is left at its initial value = 5777777777_8
110	1600	1602	B3	Sub-satellite Longitude East longitude of normal from spacecraft to ellipsoid,expressed in 10^{-6} radians. Equatorial radius = 6378.144km Polar radius = 6356.759km
111	1603	1605	B3	Sub-satellite Geocentric Latitude Expressed same as in item 109.
112	1606	1608	B3	Altitude The distance from the spacecraft to ellipsoid measured along the normal,expressed in meters. If S/C ephemeris is not available, each 24 bits of item 110 thru 112 is left at its initial value = 5777777777_8.
113	1609	1611	B3	Spacecraft Day/Twilight/Night Status 0 = Day (Spacecraft & subtract point both illuminated 1 = Twilight (Spacecraft illuminated,sabtract point in shade) 2 = Night (Spacecraft & Subtract point both in shade)
114	1612	1656		Repeat of item 101 to 113 for 60 GMT seconds after the GMT given in item 96 thru 98.
115	1657	1701		Repeat of item 101 to 113 for 120 GMT seconds after the GMT given in item 96 thru 98,but only if 3 minutes of ephemeris data coincide with the 2 minutes 8 secondstime period contained in this record. Otherwise, each 24 bits will be 5777777777_8.
116	1702	1704	B3	GMT(MS) of Start of First VIP Major Frame This is given as increment in milliseconds from

				the time given in item 96-98. This number will always negative except when ILT data record starts exactly on the GMT integer minutes. It may cause the day count to change.	
117		1705	1707	B3	Spacecraft Time(1/12 Days) of Start of First VIP Major Frame to be added to the next 24-bit word (item 118). This may be negative and may cause the day count to change.
118		1708	1710	B3	Spacecraft Time(MS) of Start of First VIP Major Frame to be added to the item 117. This provides the start time of data which follows in item 119 thru 131. If this word is negative,no VIP data was available. The MSB will be used as the sign bit.
119		1711	1730		VIP Major Frame Q/C
120		1731			Spare 11111111_2
121		1732	1755		Sensor-Spacecraft Status
122		1756	1767		THIR Housekeeping Data
123		1768	1772		LIMS Housekeeping Data
124		1773		B1	CZCS Baseline Temperature The value is in raw counts
125		1774	1776		Spacecraft Pitch Bit 1(MSB)-2 ; source code 00 = ACS data only 01 = ACS and DSAS data 10 = No ACS data(No VIP Data) In this case,entire 24 bits are set to 5777777_8. 11 = Pitch bias inserted Bit 3-24 ; Signed binary integer radian value multiplied by 10^6.
126		1777	1779		Spacecraft Yaw
127		1780	1782		Spacecraft Roll
128		1783	1785		Spacecraft Pitch Rate Bit 1(MSB)-2 ; 00 = Normal Computation 01 = Not Computed because of gating 11 = Not computed because CZCS turned on or off about this time. 10 = Not computed because no ACS data was available Bit 3-24 ; Rate of change of S/C pitch. Signed binary integer radians per second multiplied by 10^6.
129		1786	1788		Spacecraft Roll Rate
130		1789	1791	B3	DSAS Declination to Sun (Azimuth Angle) Tenth-of-degrees relative to the S/C axes,and ranges from -1800 to 1800 with negative values for sun directions to the left of S/C track(-Y hemisphere). The azimuth angle is zero when sun direction is aligned with S/C XZ-plane. Set to 5777777_8 if no data is available.
131		1792	1794	B3	DSAS Declination to Sun (Elevation Angle)

				Tenth-of-degrees relative to the S/C axes,and range from -1800 to 1800 with positive values corresponding to sun directions below the S/C XY-plane(+Z hemisphere). Set to 5777777_8 if no data is available.
132	1795	2109		15 additional sets of item 125 thru 131 for a total of 16 sets. Each set is for 1 spacecraft second after previous set(next second).
133	2110	4944		7 additional sets of items 117 thru 132 for a total of 8 sets for 2 min.8 sec of coverage.
134	4945	4947	B3	Start Data Quality Loss Time The start time of an interval contained in this 2 min.8 sec period,where data quality loss has occurred,expressed as a GMT(milliseconds) increment from time given in item 116.The value should be multiples of 40 milliseconds.
135	4948	4950	B3	End Data Quality Loss Time The end time(milliseconds increment from time in item 116) of the data quality loss interval descrived above.
136	4951	5316		61 additional pairs of data quality loss intervals as descrived in item 134 and 135. Filled with 24 bit word 5777777_8 if no more intervals)
137	5317	5319		Data Quality Loss IntervalCount,and Next Record Flag Bit1(MSB)-12 ; Integer value indicating number of valid bit slip intervals in this record.(binary integer) Bit13-24 ; Next Data Flag
138	5320	5322		Input Data Flags giving the information about the six sources of input data used to generate this record. Bit1(MSB)-2 ; Time Corrections 00 - No, 01 - Yes Bit 3-4 ; Solar Ephemeris 00 - No, 01 - Yes Bit 5-6 ; Data Quality Loss Information 00 - No, 01 - Yes Bit 7-8 ; UFO-ILT(VIP data & SAM II data) 00 - No, 01 - Yes Bit 9-10 ; Spacecraft Ephemeris 00 - No, 01 - Predictive, 11 - Definitive Bit 11-12 ; Rate Coefficients 00 - No, 01 = Yes
139	5323	5325		Stripper Information Flag
140	5326	5328		CHECKSUM Result of adding all previous 24 bit words together.

IMAGERY_VOLUME
CRTT_DATA_FILE
IMAGE_RECORD

Field or Field-Group Name	Start Byte	Last Byte	Format	Description and Explanation	Content
1	1	2		Physical Record Number Bit 1(MSB)-Bit 12 : Physical Record Number Starts at 2 and increments by 1's up to a maximum of 971 physical records. (binary integer) Bit 13-Bit 16(LSB) : Spares	
2	3			File Control Status and Record I.D. Bit 1(MSB)-2 : File Control Status Bit 1 ; 1 = This record is the last one written in CRTT data file Bit 3-8 : Record I.D. 1 = Leading Documentation Record 2 = Trailing Documentation Record 7 = Data Record	
3	4			Calibration Quality Summary Bit 1(MSB) 1 = Questionable Ephemeris Bit 2 1 = Questionable Spacecraft Attitude Bit 3 1 = At least one of the expected channels not present Bit 4 1 = At least one of the expected channels had active calibration values outside expected range Bit 5 1 = At least one of the expected channels had voltage staircase count outside expected range Bit 6 1 = Undefined	
4	5	6	B2	Scan Sequence Number (from 1 to 970) Missing scan lines will be accounted for.	
5	7			Spare	0
6	8		B1	Time Update Flag Indicates the trimester in which the time update occurred in the CZCS/ZIP major frame. 0 = no update occurred in this scan	
7	9	10	B2	Year Number (in the form "1978")	
8	11	12	B2	Day Number (1 to 366)	
9	13	16	B4	The Number of Milliseconds since the beginning of the GMT day	
10	17	18	B2	Subcommutated Data Value One of the 32 housekeeping data values that repeat every 32 scan lines, represented 8 whole and 8 fractional bits	
11	19		B1	Subcom I.D. Number The channel number for the subcommuted housekeeping data (0 to 31)	
12	20			Spare	0

13	21	52	16B2	Voltage Staircase Counts of Ch.1 from step 1 to step 16. Each count value is an average of the last two samples of the 4 data samples. Each value is 16 bits with 8 bits whole and 8 bits fractional parts.
14	53	84	16B2	Voltage Staircase Counts of Ch.2
15	85	116	16B2	Voltage Staircase Counts of Ch.3
16	117	148	16B2	Voltage Staircase Counts of Ch.4
17	149	180	16B2	Voltage Staircase Counts of Ch.5
18	181	212	16B2	Voltage Staircase Counts of Ch.6
19	213	214	B2	Ch.1 Calibration Lamp Radiance Count The data is an average of 4 samples. The data has MSB 8 bits whole part and LSB 8 bits fractional part,
20	215	216	B2	Ch.2 Calibration Lamp Radiance Count
21	217	218	B2	Ch.3 Calibration Lamp Radiance Count
22	219	220	B2	Ch.4 Calibration Lamp Radiance Count
23	221	222	B2	Ch.5 Calibration Lamp Radiance Count
24	223	224	B2	Ch.6 Blackbody Calibration Count
25	225	226	B2	Blackbody Temperature Count The data is an average of the 4 samples The data has 8 bits whole and 8 bits fractional part.
26	227	228		Bit Slip/Loss of Sync Summary Bit 1(MSB) 1 = 1 or more minor frames had a bit slip or loss of sync 0 = no bit slip or loss of sync Bit 2 1 = bit slip or loss of sync at 15th minor frame 0 = no bit slip or loss of sync at 15th minor frame . . . Bit 16 1 = bit slip or loss of sync at 1st minor frame 0 = no bit slip or loss of sync at first minor frame
27	229	230	B2	Number of HDT Sync Losses detected processing this scan
28	231	232	B2	The Count of HDT Parity Errors detected processing this scan
29	233	234	B2	The Count of WBVT Sync Losses detected by the pre-processor processing this scan
30	235	236	B2	The Count of WBVT bit slip detected by the pre-processor processing this scan
31	237	544	77B4	Geodetic Latitudes for 77 successive Anchor Point Pixels. Each value ie a signed 32 bit binary integer with 9 bits whole and 22 bits fractional.
32	545	852	77B4	Longitudes for 77 successive Anchor Point Pixels Each value is a signed 32 bits binary integer

				with 9 bits whole and 22 bits fractional.	
33	853	854	B2	Pixel Number at Nadir Consists of 11 bits whole part and 5 bits fractional. The maximum resolution is 0.04 deg. The number is counted from the beginning of the earth scan.	
34	855			Calibration Quality Flag for Ch.1	
				Bit 1(MSB)-2 Undefined	0
				Bit 3 1 = data expected but not present	
				Bit 3-8 Undefined	0
35	856			Calibration Quality Flag for Ch.2	
36	857			Calibration Quality Flag for Ch.3	
37	858			Calibration Quality Flag for Ch.4	
38	859			Calibration Quality Flag for Ch.5	
39	860			Calibration Quality Flag for Ch.6	
40	861	2828	196881	Data Values of Ch.1	
42	2929	4896	196881	Data Values of Ch.2	
43	4897	6864	196881	Data Values of Ch.3	
44	6865	8832	196881	Data Values of Ch.4	
45	8833	10800	196881	Data Values of Ch.5	
46	10801	12768	196881	Data Values of Ch.6	

IMAGERY_VOLUME
OZONEDATA_FILE
FILE_DESCRIPTOR_RECORD

Field or Field-Group Name	Start Byte	Last Byte	Format	Description and Explanation	Content
REC_IDE_SEGM	1	16		Record Identification Segment	
1	1	4	B4	Record Sequence Number	1
2	5		B1	File Code (according to CEOS)	63
3	6		B1	Record Code (according to CEOS)	192
4	7		B1	Mission Code (according to CEOS)	18
5	8		B1	Origin Code (according to CEOS)	18
6	9	12	B4	Length of this record	1764
7	13	14	A2	ASCII/EBCDIC Flag	A$
8	15	16	A2	2 Blanks	$$
FDR_FIXED_SEGM	17	180		File Descriptor Record Fixed Segment	
9	17	28	A12	Control Document Number for this Data File Format	NICZ-001-001
10	29	30	A2	Control Document Revision Number <XX>,where XX="$A",etc.	$A
11	31	32	A2	File Design Descripter Revision Letter <XX>,(Initially '$A',then '$B',etc.)	$A
12	33	44	A12	Software Release Number NICZ-001-XXX, initially XXX=001,then 002,etc.	
13	45	48	I4	File Number	$$$3
14	49	64	A16	File Name	NI7$CZCS$OZONEDT
15	65	68	A4	Record Sequence and Location Type Flag	FSEQ
16	69	76	I8	Sequence Number Location	$$$$$$$5
17	77	80	I4	Sequence Number Field Length	$$$2
18	81	84	A4	Record Code and Location Type Flag -n/a	
19	85	92	I8	Record Code Location -n/a	
20	93	96	I4	Record Code Field Length -n/a	
21	97	100	A4	Record Length and Location Type Flag -n/a	
22	101	108	I8	Record Length Locaton -n/a	
23	109	112	I4	Record Length Field Length -n/a	
24	113		A1	Flag indicating that data interpretation information is included within the file descripter record. <X> , where X=Y or N ,for yes or no	Y
25	114		A1	Flag indicating that data interpretation information is included within the file in record other than the descripter <X> , where X=Y or N ,for yes or no	N
26	115		A1	Flag indicating that data display information is included within the file descripter record <X> ,where X=Y or N ,for yes or no	N
27	116		A1	Flag indicating that data dislay information is included within the file record other than the file descripter.	N

					<X> , where X=Y or N ,for yes or no.	
28		117	180		Reserved Segment	Blanks
FDR_VARIA_SEGM	*	181	1764		File Descriptor Record Variable Segment	
29		181	186	I6	Number of Ozonedata Records	$$$180
30		187	192	I6	Number of Trailer Records	$$$$$4
31		193	198	I6	Ozonedata Record Length	$$1764
32		199	204	I6	Trailer Record Length	$$1764
33		205	208	I4	Location of the number of grid cells in the latitude zone	$$13
34		209	212	I4	Field Length of the Location of the number of grid cells in the latitude zone.	$$$2
35		213	216	I4	Location of the number of observations permitted per cell.	$$15
36		217	220	I4	Field Length of the Location of the number of observations permitted per cell.	$$$2
37		221	1764		Blanks	Blanks

IMAGE_VOLUME
OZONEDATA_FILE
OZONEDATA_RECORD

Field or Field-Group Name		Start Byte	Last Byte	Format	Description and Explanation	Content
OZON_HDR_SEGM	*	1	20		Header Information Segment	
1		1	4		IPD Word (Packed Integer) Bit 1(MSB)-12 Physical Record Block Number Bit 13-16 Spare Bit 17 Record Control 1 = last block on file Bit 18 File Control Bit 19-24 Record I.D. 61 = data record 62 = trailer record 63 = trailer file record Bit 25-32 Spare	0000 00000000_2
2		5	6	B2	Record Sequence Number 1 to 180 for data records -180 for data trailer record -1 for trailer file Two's complement integer	
3		7	8	B2	Latitude for Center of the 1 deg zone Value range from -895 at 89-90 S zone to 895 at 89-90 N zone (in degrees*10). Two's complement integer.	
4		9	10	B2	Longitude for the center of the first cell (in degrees) Two's complement integer.	-180
5		11	12	B2	Longitude grid size for the zone (in degrees*100)	
6		13	14	B2	N; The number of grid cells in the latitude zone	
7		15	16	B2	M; The number of observations permitted per cell	
8		17	18	B2	Year (4 digits).	
9		19	20	B2	Day of the year (from 1 to 366).	
OZONDATA_SEGM	*	21	1764		Ozoneata for the zone	
10		21	22	B2	GMT time of primary observation for the first cell in the zone (in GMT hour*1000).	
11		23	24	B2	Total Ozone(matm-cm) corresponding to the observation in byte 21-22.	
12		25	26	B2	Reflectivity corresponding to the observation in byte 21-22 (in percent).	
13		27	6N+20		Same as byte 21 to 26 except for the second to Nth cells in the zone.	
14		6N+21	1748		Same as byte 21 to 6N+20 except for the 2nd to Mth observation if M is larger than 1 for the zone.	
15		1748	1764	882	Spare Words (two's complement integer)	-777

IMAGE_VOLUME
OZONEDATA_FILE
OZONE_TRAILER_RECORD

Field or Field-Group Name	Start Byte	Last Byte	Format	Description and Explanation	Content
1	1	4		IPD Word (Packed Integer)	
				Bit 1(MSB)-12 Physical Record Block Number	
				Bit 13-16 Spare	0000_2
				Bit 17 Record Control	
				1 = last block on file	1
				Bit 18 File Control	
				Bit 19-24 Record I.D.	62
				61 = data record	
				62 = trailer record	
				63 = trailer file record	
				Bit 25-32 Spare	00000000_2
2	5	6	B2	Record Sequence Number	-180
				1 to 180 for data records	
				-180 for data trailer record	
				-1 for trailer file	
				Two's complement integer	
3	7	1764		Spare Words (two's complement integer)	-777

NULL_VOLUME
VOLUME_DIRECTORY_FILE
VOLUME_DESCRIPTOR_RECORD

field or field-group name		start byte	last byte	format	DESCRIPTION AND EXPLANATION	CONTENT
REC_IDE_SEGM	*	1	16		Record Identification Segment	
1		1	4	B4	Record Sequence Number	1
2		5		B1	File Code (according to CEOS definition)	192
3		6		B1	Record Code (according to CEOS definition)	192
4		7		B1	Mission Code (according to CEOS definition)	63
5		8		B1	Origin Code (according to CEOS definition)	18
6		9	12	B4	Length of this record	360
7		13	14	A2	ASCII/EBCDIC Flag	A$
8		15	16	A2	2 Blanks	$$
VOL_DOC_SEGM	*	17	44		Volume Documentation Segment	
9		17	28	A12	Superstructure control document number	CCB-CCT-0002
10		29	30	A2	Superstructure control document revision number	$F
11		31	32	A2	Superstructure record format revision letter <XX> (initially '$A',then '$B',etc...)	$A
12		33	44	A12	Software release number:NICZ-001-XXX initially XXX=001,then 002,etc	
VOL_IDE_SEGM	*	45	172		Volume Identification Segment	
13		45	60	A16	Physical Volume identification:<MNNS$YYDDDHHMM$$> M - Mission (=8 for NIMBUS) NN - Mission number (=07 for NIMBUS-7) S - Sensor ID (=C for CZCS) YY - Year of tape creation DDD - Day of tape creation HH - Hour of tape creation MM - Minutes of tape creation	
14		61	76	A16	Logical Volume identification:<MNNS$YYDDDHHMM00> M - Mission (=8 for NIMBUS) NN - Mission number (=07 for NIMBUS-7) S - Sensor ID (=C for CZCS) YY - Year of center frame acquisition DDD - Day of center frame acquisition HH - Hour of center frame acquisition MM - Minutes of center frame acquisition	
15		77	92	A16	Volume Set ID	NIMBUS7CZCS$$$
16		93	94	I2	Number of Physical Volumes in the Set	$1
17		95	96	I2	Physical Volume Number, Start of Logical Volume	$1
18		97	98	I2	Physical Volume Number, End of Logical Volume	$1
19		99	100	I2	Physical Volume sequence number (i.e. of current tape)	$1
20		101	104	I4	First Referenced File Number in this Physical Volume	$$$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>	Blanks
24	121	128	A8	Logical Volume Creation Time <HHMMSSXX>	Blanks
25	129	140	A12	Logical Volume Generating Country	Blanks
26	141	148	A8	Logical Volume Generating Agency	Blanks
27	149	160	A12	Logical Volume Generating Facility	Blanks
28	161	164	I4	Number of Pointer Records in Volume Directory	Blanks
29	165	168	I4	Number of Records in Volume Directory	Blanks
30	169	172	I4	Number of Logical Volumes on this Physical Volume	Blanks
31	173	260	A88	Volume Descriptor Spare Segment	Blanks
32	261	360	A100	Local Use Segment	Blanks

4 ANNEXES

4.1 CEOS codes

The Commitee on Earth Observation Satellites(CEOS) has suggested the following codes for the different record types (they are all in decimal):

	CEOS file	CEOS record	CEOS mission	CEOS origin
VOLUME DESCRIPTOR	192	192	18	18
NULL VOLUME DESCRIPTOR	192	192	63	18
FILE POINTER	219	192	18	18
FILE DESCRIPTOR	63	192	18	18
TEXT RECORD	18	63	18	18

4.2 Record Fields Codes

These are the names used for the fields and group of fields in the CZCS LEVEL1 ESA format description.

REC_IDE_SEGM - Identifies the Record Identification Segment.

VOL_DOC_SEGM - Identifies the Volume Documentation Segment of the Volume Descriptor Record.

VOL_IDE_SEGM - Identifies the Volume Identification Segment of the Volume Descriptor Record.

FILE_IDE_SEGM - Identifies the File Identification Segment appearing in the File Pointer Record.

FDR_FIXED_SEGM - The File Descriptor Record Fixed Segment appear in each File Descriptor Record.

FDR_VARIA_SEGM - The same is for the File Descriptor Record Variable segment.

ILT_TYPA_SEGM - Identifies the ILT TYPE A data Segment of the CRTT Documentation Record.

OZON_HDR_SEGM - Identifies Ozonedata Header Information Segment of the Ozonedata Record.

OZONEDATA_SEGM - Identifies Ozonedata Segment of the Ozone-data Record.

STD_HDR - The Standard Header specified by NASA CRT tape specification.

QL_IMA_PAR - Identifies the Quicklook Image Parameter segment of the Quicklook File Descriptor Record.

QL_REC_PAR - Identifies the Quicklook Record Parameter Segment of the Quicklook File Descriptor Record.

QL_IMA_DESC - Identifies the Quicklook Image Description Segment of the Quicklook File Descriptor Record.

QL_IMA_PXL_DESC - Identifies the quicklook Image Pixel Description Segment of the Quicklook File Descriptor Record.

4.3 Pressure Level File Format

For CZCS Level-2 processing, the pressure level data corresponding to the CZCS observation date will be used.
This data are archived on Optical disk, but are not delivered to the users.
The following tables specify the Pressure Level File Format archived on Optical disk.

IMAGERY_VOLUME
PRESSURE_LEVEL_FILE
FILE_DESCRIPTOR_RECORD

field or field-group name		start byte	last byte	format	DESCRIPTION AND EXPLANATION	CONTENT
REC_IDE_SEGM	*	1	16		Record Identification Segment	
1		1	4	B4	Record Sequence Number	1
2		5		B1	File Code (according to CEOS definition)	63
3		6		B1	Record Code (according to CEOS definition)	192
4		7		B1	Mission Code (according to CEOS definition)	18
5		8		B1	Origin Code (according to CEOS definition)	18
6		9	12	B4	Length of this record	10000
7		13	14	A2	ASCII/EBCDIC Flag	A$
8		15	16	A2	2 Blanks	$$
FDR_FIXED_SEGM	*	17	180		FILE DESCRIPTOR RECORD FIXED SEGMENT	
9		17	28	A12	Control Document Number for this Data File Format	NICZ-001-001
10		29	30	A2	Control Document Revision Number <XX>,where XX='$A', etc.	$A
11		31	32	A2	File Design Descriptor Revision Letter <XX>, (Initially '$A',then '$B',etc.)	$A
12		33	44	A12	Software Release Number NICZ-001-XXX, initially XXX=001,then 02,etc.	NICZ-001-001
13		45	48	I4	File Number	$$$4
14		49	64	A16	File Name	NI7$CZCSPRESLEV
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 -n/a	
19		85	92	I8	Record Code Location -n/a	
20		93	96	I4	Record Code Field Length -n/a	
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	Flag indicating that data interpretation information is included within the file descriptor record. <X> ,where X=Y OR N ,for YES or NO	Y
25		114		A1	Flag indicating that data interpretation information is included within the file in record(s) other than the descriptor <X> ,where X=Y OR N ,for YES or NO	N
26		115		A1	Flag indicating that data display information is included within the file descriptor record. <X> ,where X=Y OR N ,for YES or NO	N
27		116		A1	Flag indicating that data display information is included within the file in record(s) other than the file descriptor. <X> ,where X=Y OR N ,for YES or NO	N

28		117	180		Reserved Segment	Blanks
FDR_VARIA_SEGM	*	181	10000		FILE DESCRIPTOR RECORD VARIABLE SEGMENT	
29		181	186	I6	Number of Pressure Level Records	$$$$$1
30		187	192	I6	Pressure Level Record Length	$10000
31		193	10000		Blanks	Blanks

IMAGERY_VOLUME
PRESSURE_LEVEL_FILE
PRESSURE_LEVEL_RECORD

field or field-group name		start byte	last byte	format	DESCRIPTION AND EXPLANATION	CONTENT
REC_IDE_SEGM	*	1	16		Record Identification Segment	
1		1	4	B4	Record Sequence Number	2
2		5	8	A4	Blanks	Blanks
3		9	12	B4	Length of this record	10000
4		13	14	A2	ASCII/EBCDIC flag	A$
5		15	16	A2	2 blanks	$$
PRES_HDR_SEGM	*	17	54		Header Information Segment	
6		17	20	B4	Initial longitude point (in degrees W .001)	
7		21	24	B4	Initial latitude point (in degrees N .001)	
8		25	28	B4	Longitude mesh width (in degrees .001)	
9		29	32	B4	Latitude mesh width (in degrees .001)	
10		33	36	B4	Number of lines	
11		37	40	B4	Number of columns	
12		41	44	B4	Pressure level in hPa	
13		45	48	B4	Year	
14		49	52	B4	Day of year	
PRESDATA_SEGM		53	10000		Pressure Level Data Segment	
15		53	2N+52	N*B2	Level hight (in meters) N = (number of lines)*(number of columns)	
16		2N+53	10000		Spares	Blanks

CZCS LEVEL 1 PRODUCT

CCT FORMAT SPECIFICATIONS

Release 1.1

ESA EARTHNET

February 1991

1. Overview of the CZCS Level 1 CCT format

1.1 Format structure

The ESA/EPO NIMBUS-7 CZCS Level 1 products are recorded on Computer Compatible Tape(CCTs) in a format that is "partially" conformed to the Standard Family Format(SFF) convention. The Standard Family Formac structure is shown in Fig.1.

Conventionally, the individual tape is referred to as a physical volume. The logical volume refers to data files logically grouped on the tape. The SEF allows that more than one logical volume (a volume set) be stored on the same physical volume. One logical volume can also be split between different physical volumes.

The logical volume of ESA/EPO CZCS Level 1 product consists of the following files.

(1)A volume directory file which contains the logical and physical structure of the tape (the number of all files on the CCT, the position and content of these files, the number of records and maximum record length within each file).

A volume directory file consists of:

- a volume descriptor record which contains the information that applies to the logical volume as a whole such as information on the data source, physical volume identification, logical volume identification within the tape or tape set and specifies the number of file pointer records (hence the number of the data files) and text records;

- a file pointer record for each of the files to supply the number and name of the associated data files, the maximum record length and the type and format of the data;

- text record(s) corresponding to the "comment statement" of a computer programme to provide information in human readable form. ESA/EPO uses the text record to specify the product type and processing performed, the location, data and time of product creation, the specific scene identification and the physical tape identification. In CZCS Level 1 case, Standard Header Record in accordance with NASA specified CZCS Radiance and Temperature Tape (CRTT) format is also contained.

(2)The data files which consist of Quicklook File, CRTdata File and Ozonedata File. The Ozone data are additional relevant information, and will not be contained when the data corresponding to the CZCS observation date are not available. The data files are not conformed to the SFF

conventions. The CRTdata and the ozonedata are recorded in accordance with NASA tape format specification. The Ozonedata File contains a file descriptor record, which explains the number of data in the field and contains location of significant data field. But the CRTdata File does not contain a file descriptor record.

(3)A null volume directory file which indicates the end of the logical volume of a volume set (a collection of logical volumes).

1.2 Data organization

The information of ESA/EPO CZCS Level 1 products is organized in one imagery logical volume. The data organization within each logical volume is summarized below and in figure 2.

The Volume directory file usually has 6 records, namely a Volume descriptor and four pointers (for the Quicklook, CRTdata, Ozonedata and Pressure Level files), plus a Text record. However, when the Ozonedata and/or Pressure Level data are not available, the file pointer records for these data are not present. Each record is 360 byte long.

The quicklook file nominally contains 326 records; file descriptor record, catalog record, quicklook processing parameter record and nominally 323 quicklook image records. The catalog record gives useful informations, including data quality information. The quicklook processing parameter record contains informations concerning quicklook image processing parameters. The 323 quicklook image records correspond to one quicklook image.
Each record is 668 bytes long.

The CRTdata File contains nominally 972 records. CRT Documentation Record appears twice as the first and last record. Both records have the same format and the length of 5328 bytes each. The 970(in nominal case) image records correspond to a 2 minutes scene of CZCS. Each record contains one scan line data in the 6 spectral bands, with line quality data, geodetic location data,etc. Each image record is 12780 bytes long. The format of the CRTdata File is the same as the NASA specified CRT tape format(CRTT).

The Ozonedata File contains 184 records; file descriptor record, 180 Ozonedata Records and 4 Trailer Records. Each Ozonedata Record contains total ozone & reflectivity averages and the time of observation (GRIDTOMS data) of one degree latitude zone. The observation day is the same as that of CZCS observation. The 4 trailer records mark the

end of the file. The format of Ozonedata Records and Trailer Records are in accordance with NASA specification. Each record is 1764 bytes long.

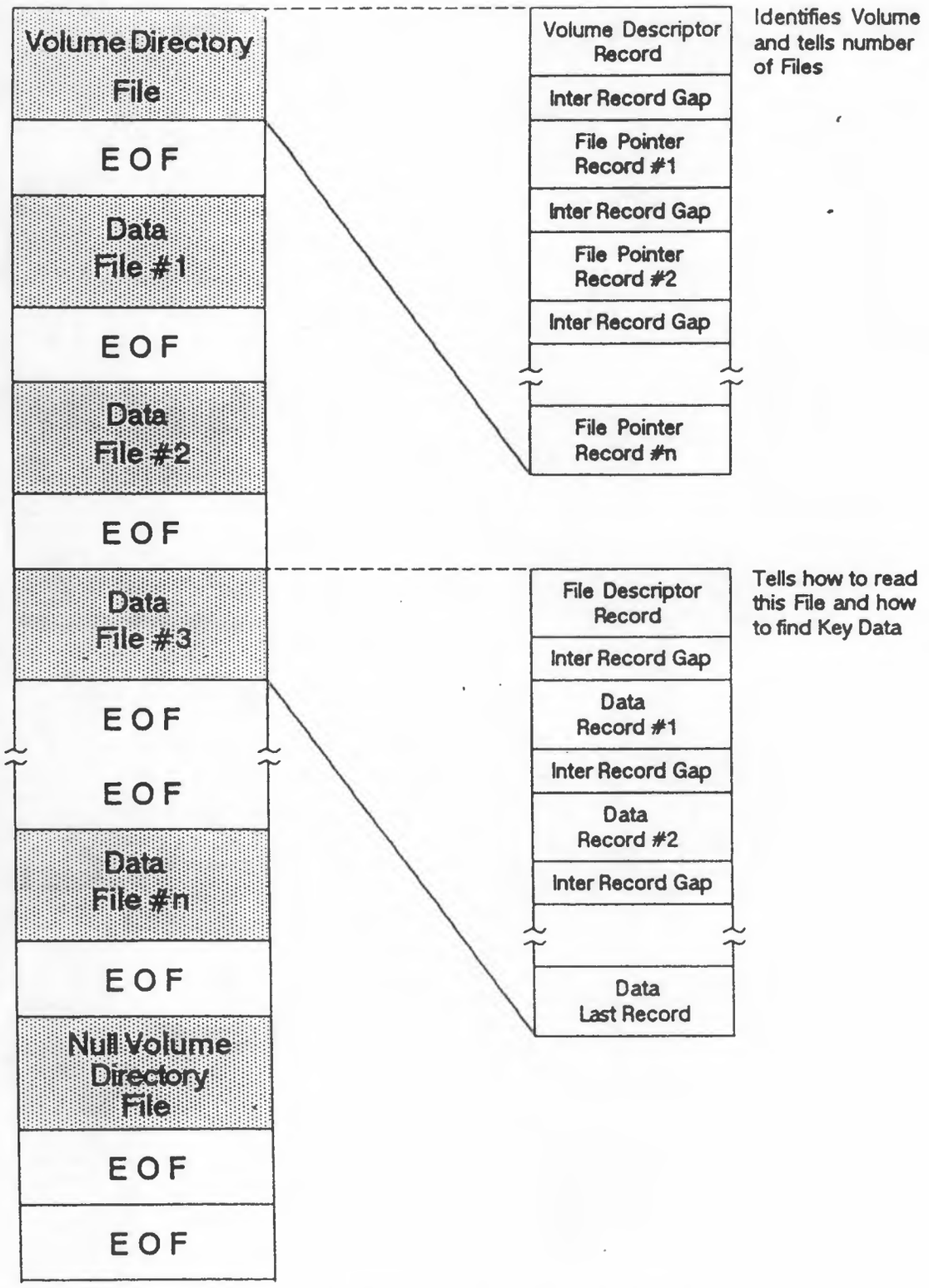
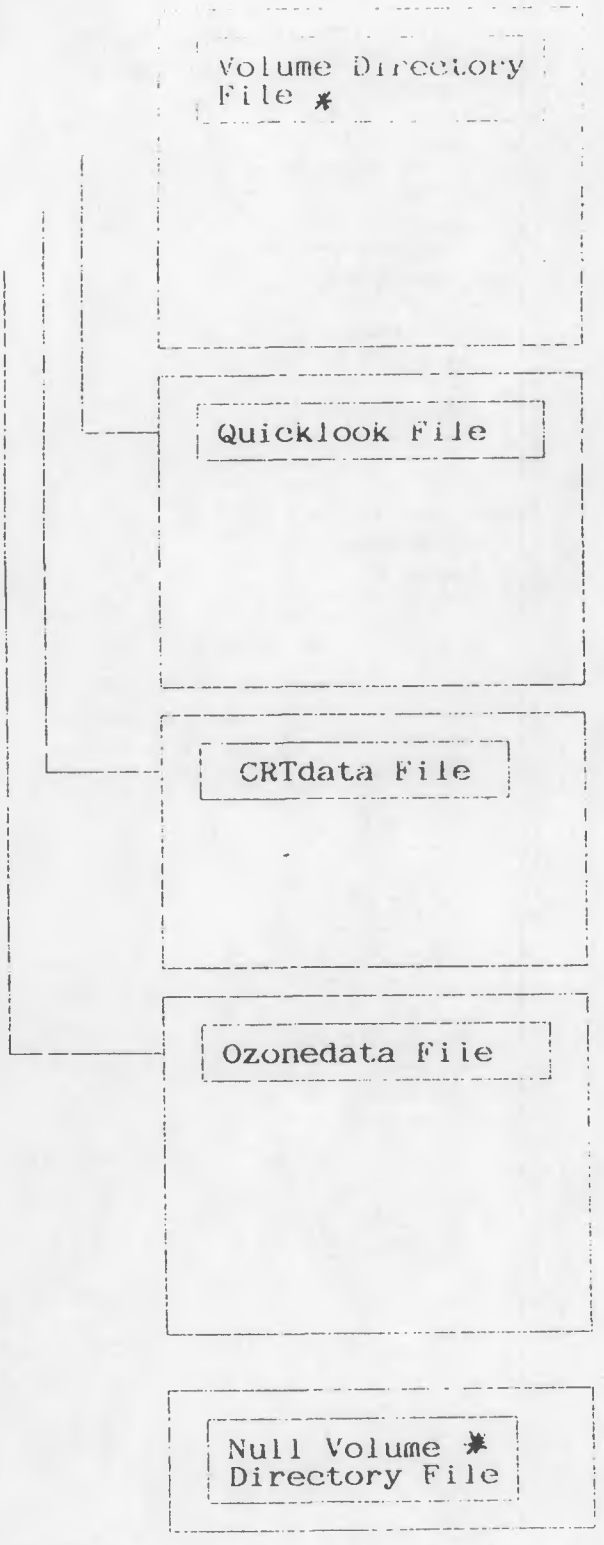


Figure 1: The Standard CCT Format – Overview

figure 2



	Record Length in bytes
Volume Descriptor Record	360
Quicklook File Pointer Record	360
CRTdata File Pointer Record	360
Ozonedata File Pointer Record	360
Text Record	360
File Descripter Record	656 *
Catalog Information Record	656 (1)
Quicklook Processing Parameter Record	656 *
Quicklook Imege Record No. 1	656
.	
Quicklook Image Record No. 323	656
CRT Documentation Record	5,328
Image Record No. 1	12,780
.	
Image Record No. n(970)	12,780
CRT Documentation Record	5,328
File Descriptor Record	1,764 *
Ozonedata Record 1(Zone 1)	1,764
.	
Ozonedata Record 180(Zone 180)	1,764
Trailer Record 1	1,764
.	
Trailer Record 4	1,764
Null Volume Descriptor Record	360

* Not present in "tar" Format
(1) CRT.CAT file in "tar" Format

2. Logical volume content description

2.1 Volume Directory File

2.1.1 Volume Descriptor Record

The Volume Directory File nominally contains 5 records of 360 bytes length each.

In the Volume Descriptor Record the most important informations are:

-at field 12, starting at byte 33, the identificator of the software version used to write the logical volume;
-at field 16-19, there are explanations about the physical volumes set;
-at field 21-27, there are explanations about the logical volumes set;
-at field 28, byte 161, there is the number of file pointer records in the Directory File;
-at field 29, bytes 165, there is the total number of records in the Directory File.

2.1.2 File Pointer Record

There are nominally 3 File Pointer Records (Quicklook File, CRTdata File and Ozonedata File) with informations about referenced file, position in the tape, name, class, data type, number and length of records.

2.1.3 Text Record

The last record in the Volume Directory File is a Text Record with the product identification and the scene identifications. The NASA specified Standard Header of CRTT is also recorded from byte 179 to 304.

2.2 Quicklook File

2.2.1 File Descriptor Record

Since all the records except for the file descriptor have no record identification segment, the record code location & field length informations and the record length location & field length informations are not applicable in the fixed segment. the variable segment of the record provides the number and the record length of the catalog information record, Q/L processing parameter record and the Q/L image records. it also contains the format informations of the Q/L image.

2.2.2 Catalog Information Record

The catalog information record contains the useful catalog informations. They are the image identification informations(data aquisition time, geometric location of the image, etc.), the data quality informations(data quality flag, number of bad or missing lines, percentage of water pixels, percentage of Ch.4 saturated water pixels, etc.), and so on.

2.2.3 Q/L processing parameter record

The quicklook processsing parameter record contains the Q/L processing parameters. They are sensitivity decay parameters of CZCS, atmospheric parameters, and so on.

2.2.4 Q/L image record

The processing of Q/L image generation is as follows;
(1) 2 minutes CRT data are 1/3 subsampled.
(2) Each image pixel is classified as ch.4 saturated water pixel, ch.4 not saturated water pixels, land pixels and cloud pixels.
(3) Ch.4 not saturated water pixels are simply atmospheric corrected and converted to sub-surface reflectances. The value of the pixel represents the ratio of sub-surface reflectance of ch.1 to ch.3

One record corresponds to one Q/L image line.

2.3 CRTdata File

2.3.1 CRT Documentation record

CRT Documentation Record appears twice as the first and last records in the CRTdata File. The format of the two documentation records are identical; however,certain data fields (designated by (*) in format description) may not be valid in the first documentation record. The data fields not valid are those data that may not be available, depending upon the processing mode, when the first documentation record is written to the file.
In the CRT Documentation record, important informations are:
-time of the beginning and end of the scene
-number of scans of the scene
-geodetic location of the scene center and the corners
-data quality (number of missing scans, HDT SYNC losses, HDT parity errors, WBVT SYNC losses, WBVT bit slip)
-sensor observation status (gain,threshold,tilt angle)
-scene center time, solar azimuth/elevation, S/C attitude
-tick locations
-slope and intercepts for the conversion of CCT count data to the radiometric unit(mW/cm^2-ster-um)
-temperature conversion table

CRT documentation file also contains the original ephemeris information taken from NASA provided CZCS-ILT (Image Location Tape)

2.3.2 Image Record

Image record contains the following information;
-scan sequence number
-time of the scan
-data quality of the scan (SYNC loss, bit slip,parity error)
-77 anchor point geodetic location
-data values of channel 1 to 6 for one line

2.4 Ozonedata File

2.4.1 File Descriptor Record

Since Ozonedata is recorded in NASA specified format, the record code location & field length information and the record length location & field length information are not applicable in the fixed segment.
The variable segment of this record provides the number of the Ozonedata Records & Trailer Records, the record length of the Ozonedata records & Trailer Records, location & field length of the number of grid cells in the latitude zone, and the location & field length of the number of observations permitted per cell.(See 2.3.2)

2.4.2 Ozonedata Record

The Ozonedata Records contain total ozone and reflectivity averages over the globe which are observed on the same day as that of the CZCS observation. The globe is divided into 1 deg. latitude zones. Each zone is subdivided into cells. The number of cells in a zone varies from 288 at the equator to 72 near the pole, as described in table 1.
A set of avarage values of three quantities (total ozone, reflectivity and the time of observation) for individual orbits, henceforth called the "observational set", is provided for each cell. Additional observation sets are provided for cells poleward of 50 deg. as prescribed in table 1.
The first 20 bytes of each record contain Header information regarding the zone.

2.4.3 Trailer Record

4 trailer records are put to mark the end of the Ozonedata File.

Table 1 Specification for Ozonedata Array

Constant latitude increment of 1.0 deg. from pole to pole(180 zones)

Latitude	Longitude size	Number of cells in zone(N)	Number of observations permitted per cell(M)	Expected Number of orbits per cell	Resolution (km*)
0 -50 deg.	1.25deg.	288	1	1.0 1.6	110*138 110*88.4
50-70 deg.	2.5deg.	144	2	1.6 3.5	110*176 110*94.1
70-80 deg.	5deg.	72	4	3.5 7.3	110*188 110*95.5
80-90 deg.	5deg.	72	4	7.3 14.0	110*95.5 110*0.0

2.5 Null Volume Directory File

This volume contains only the Volume Descriptor record. The structure is the same as the Volume Descriptor record of the Imagery volume.

3. Format description

3.1 Introduction

This chapter describes in details the records within each file of the logical volume. The order of the description follows the order in which the file appears on the tape. Each record is represented as a table consisting of seven columns:

col 1 - name of the field or of the field-group (defined in Annex 2)
col 2 - field-group indicator: 'blank' if single field
'*' if field-group
col 3 - starting byte of the field (or field-group)
col 4 - last byte of the field (or field-group)
col 5 - format in which the data of this field is written (described below)
col 6 - definition and explanation of the content of the field (or field-group)
col 7 - actual content of the field if it is a constant for an ESA/EPO product.

The format described in column 5 is standard Fortran. The main formats used in this product are:

xBn = x times data written in binary form on n bytes (unformatted);
xIn = x times data written as integer values formatted on n digits (e.g., 123 written as 1I4 is: " 123");
xFn.m = x times data written as real numbers on a total of n digits including dot and sign, with m digits for the decimal part (e.g., 123.456 written as 1F10.4 is: +123.4560");
xAn = x strings of n ASCII characters.

3.2 Record table

IMAGERY_VOLUME
VOLUME_DIRECTORY_FILE
VOLUME_DESCRIPTOR_RECORD

field or field-group name		start byte	last byte	format	DESCRIPTION AND EXPLANATION	CONTENT
REC_IDE_SEGM	*	1	16		Record Identification Segment	
1		1	4	B4	Record Sequence Number	1
2		5		B1	File code (according to CEOS)	192
3		6		B1	Record code (according to CEOS)	192
4		7		B1	Mission code (according to CEOS)	18
5		8		B1	Origin code (according to CEOS)	18
6		9	12	B4	Length of this record	360
7		13	14	A2	ASCII/EBCDIC Flag	A$
8		15	16	A2	2 Blanks	$$
VOL_DOC_SEGM	*	17	44		Volume Identification Segment	
9		17	28	A12	Superstructure control document number	CCB-CCT-0002
10		29	30	A2	Superstructure control document revision number <XX> (initially '$C')	$F
11		31	32	A2	Superstructure record format revision letter <XX> (initially '$A',then '$B',ext...)	$A
12		33	44	A12	Software release number: NICZ-001-XXX initially XXX = 001,then 002,etc	
VOL_IDE_SEGM	*	45	172		Volume Identification Segment	
13		45	60	A16	Physical Volume identification: <MNNS$YYDDDHHMM$$> M - mission (B = NIMBUS) NN - mission number (07) S - sensor identification (C = CZCS) YY - year of tape creation(tape copy from O/D) DDD - days of tape creation(tape copy from O/D) HH - hour of tape creation(tape copy from O/D) MM - minutes of tape creation(tape copy from O/D)	
14		61	76	A16	Logical Volume identification: <MNNS$YYDDDHHMM00> M - mission (B = NIMBUS) NN - mission number (07) S - sensor identification (C = CZCS) YY - year of center frame acquisition DDD - days of center frame acquisition HH - hour of center frame acquisition MM - minutes of center frame acquisition	
15		77	92	A16	Volume Set ID	NIMBUS7CZCS$$$
16		93	94	I2	Number of Physical Volumes in the Set	$1
17		95	96	I2	Physical Volume Number, Start of Logical Volume	$1
18		97	98	I2	Physical Volume Number, End of Logical Volume	$1
19		99	100	I2	Physical Volume sequence number (i.e. of current tape)	$1
20		101	104	I4	First Referenced File Number in this Physical	$$$1

				Volume	
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> (tape copy date from O/D)	
24	121	128	A8	Logical Volume Creation Time <HHMMSSXX> (tape copy time from O/D)	
25	129	140	A12	Logical Volume Generating Country (ex. ITALY$$$$$$$)	
26	141	148	A8	Logical Volume Generating Agency (ex. ESA-EPO)	
27	149	160	A12	Logical Volume Generating Facility (ex. ITA-FRASCATI)	
28	161	164	I4	Number of Pointer Records in Volume Directory	
29	165	168	I4	Number of Records in Volume Directory	
30	169	172	I4	Number of Logical Volumes on this Physical Volume	$$$1
31	173	260	A88	Volume Descriptor Spare Segment	Blanks
32	261	360	A100	Local Use Segment	Blanks

IMAGERY_VOLUME
VOLUME_DIRECTORY_FILE
QUICKLOOK_FILE_POINTER_RECORD

field or field-group name		start byte	last byte	format	DESCRIPTION AND EXPLANATION	CONTENT
REC_IDE_SEGM	*	1	16		Record Identification Segment	
1		1	4	B4	Record Sequence Number	2
2		5		B1	File code (according to CEOS)	219
3		6		B1	Record code (according to CEOS)	192
4		7		B1	Mission code (according to CEOS)	18
5		8		B1	Origin code (according to CEOS)	18
6		9	12	B4	Length of this record	360
7		13	14	A2	ASCII/EBCDIC Flag	A$
8		15	16	A2	2 Blanks	$$
FILE_IDE_SEGM	*	17	160		File Identification Segment	
9		17	20	I4	Referenced File Number	$$$1
10		21	36	A16	Referenced File Name	MI7$CZCS$Q/LDATA
11		37	64	A28	Referenced File Class	QUICKLOOK$FILE
12		65	68	A4	Referenced File Class Code	QUIC
13		69	96	A28	Referenced File Data Type	MIXED$BINARY$AND
14		97	100	A4	Referenced File Data Type Code	MBAA
15		101	108	I8	Number of Records in Referenced File	$$$$326
16		109	116	I8	Referenced File - Descriptor Record Length	$$$$$656
17		117	124	I8	Referenced File - Maximum Record Length	$$$$$656
18		125	136	A12	Referenced File Record Length Type	FIXED$LENGTH
19		137	140	A4	Referenced File Record Length Type Code	FIXD
20		141	142	I2	Referenced File Physical Volume Number, Start of File	$1
21		143	144	I2	Referenced File Physical Volume Number, End of File	$1
22		145	152	I8	Referenced File Portion, 1st Record Number for this Physical Volume	$$$$$$$1
23		153	260	A108	Pointer Spare Segment	Blanks
24		261	360	A100	Local Use Segment	Blanks

IMAGERY_VOLUME
VOLUME_DIRECTORY_FILE
CRTDATA_FILE_POINTER_RECORD

field or field-group name		start byte	last byte	format	DESCRIPTION AND EXPLANATION	CONTENT
REC_IDE_SEGM	*	1	16		Record Identification Segment	
1		1	4	B4	Record Sequence Number	3
2		5		B1	File code (according to CEOS)	219
3		6		B1	Record code (according to CEOS)	192
4		7		B1	Mission code (according to CEOS)	18
5		8		B1	Origin code (according to CEOS)	18
6		9	12	B4	Length of this record	360
7		13	14	A2	ASCII/EBCDIC Flag	A$
8		15	16	A2	2 Blanks	$$
FILE_IDE_SEGM	*	17	160		File Identification Segment	
9		17	20	I4	Referenced File Number	$$$2
10		21	36	A16	Referenced File Name	NI7$CZCS$CRTDATA
11		37	64	A28	Referenced File Class	IMAGERY$FILE
12		65	68	A4	Referenced File Class Code	IMGY
13		69	96	A28	Referenced File Data Type	BINARY$ONLY
14		97	100	A4	Referenced File Data Type Code	BINO
15		101	108	I8	Number of Records in Referenced File	
16		109	116	I8	Referenced File - Documentation Records Length	$$$$5328
17		117	124	I8	Referenced File - Data Records Length	$$$12780
18		125	136	A12	Referenced File Record Length Type	VARIA$LENGTH
19		137	140	A4	Referenced File Record Length Type Code	VRBL
20		141	142	I2	Referenced File Physical Volume Number, Start of File	$1
21		143	144	I2	Referenced File Physical Volume Number, End of File	$1
22		145	152	I8	Referenced File Portion, 1st Record Number for this Physical Volume	$$$$$$$1
23		153	260	A108	Pointer Spare Segment	Blanks
24		261	360	A100	Local Use Segment	Blanks

IMAGERY_VOLUME
VOLUME_DIRECTORY_FILE
OZONEDATA_FILE_POINTER_RECORD

field or field-group name		start byte	last byte	format	DESCRIPTION AND EXPLANATION	CONTENT
REC_IDE_SEGM	*	1	16		Record Identification Segment	
1		1	4	B4	Record Sequence Number	4
2		5		B1	File code (according to CEOS)	219
3		6		B1	Record code (according to CEOS)	192
4		7		B1	Mission code (according to CEOS)	18
5		8		B1	Origin code (according to CEOS)	18
6		9	12	B4	Length of this record	360
7		13	14	A2	ASCII/EBCDIC Flag	A$
8		15	16	A2	2 Blanks	$$
FILE_IDE_SEGM	*	17	160		File Identification Segment	
9		17	20	I4	Referenced File Number	$$$3
10		21	36	A16	Referenced File Name	NI7$CZCS$OZONEDT
11		37	64	A28	Referenced File Class	OZONEDATA$FILE
12		65	68	A4	Referenced File Class Code	OZON
13		69	96	A28	Referenced File Data Type	BINARY$ONLY
14		97	100	A4	Referenced File Data Type Code	BINO
15		101	108	I8	Number of Records in Referenced File	$$$$$185
16		109	116	I8	Referenced File - Descriptor Record Length	$$$$1764
18		117	124	I8	Referenced File Maximum Record Length	$$$$1764
19		125	136	A12	Referenced File Record Length Type	FIXED$LENGTH
20		137	140	A4	Referenced File Record Length Type Code	FIXD
21		141	142	I2	Referenced File Physical Volume Number, Start of File	$1
22		143	144	I2	Referenced File Physical Volume Number, End of File	$1
23		145	152	I8	Referenced File Portion, 1st Record Number for this Physical Volume	$$$$$$$1
24		153	260	A108	Pointer Spare Segment	Blanks
25		261	360	A100	Local Use Segment	Blanks

IMAGERY_VOLUME
VOLUME_DIRECTORY_FILE
TEXT_RECORD

field or field-group name		start byte	last byte	format	DESCRIPTION AND EXPLANATION	CONTENT
REC_IDE_SEGM	*	1	16		Record Identification Segment	
1		1	4	B4	Record Sequence Number	5
2		5		B1	File code (according to CEOS)	18
3		6		B1	Record code (according to CEOS)	63
4		7		B1	Mission code (according to CEOS)	18
5		8		B1	Origin code (according to CEOS)	18
6		9	12	B4	Length of this record	360
7		13	14	A2	ASCII/EBCDIC flag for this record	A$
8		15	16	A2	Continuation flag. This field contains two blanks unless the information of this record continues on a following record, in which case the field is coded C$.	$$
9		17	66	A50	Product identification: PRODUCT:NIMBUSNNCZCS$CRT$$$$$$$$$$$$$$$$$$$$$$$$$<CrLf>	
10		67	124	A58	Location and date/time of product creation: (ex. PROCESSED:$$ITALY$$$$$$$$ESA-EPOONYYYYMMDDATHHMMSS$$$<CrLf>) HH - Hour of creation MM - Minutes of creation SS - Seconds of creation	
11		125	148	A24	Tape identification: TAPEID:$MNNS$YYDDDHHMM<CrLf> M - mission ID (B=NIMBUS) NN - mission number (07) S - sensor (C = CZCS) YY - year of creation DDD - days of creation HH - GMT hour at time of creation MM - GMT minute at time of creation	
12		149	178	A30	Scene identification: SCENE$$:$MNNS$YYDDDHHMMSSmmm<CrLf> M - mission ID (B=NIMBUS) NN - mission number (07) S - sensor (C=CZCS) YY - year of scene acquisition DDD - day year of scene acquisition (001-366) HH - hour of scene acquisition (00-23) MM - minutes of scene acquisition (00-59) SS - seconds of scene acquisition (00-59) mmm - milliseconds of scene acquisition (000-999)	
STD_HDR	*	179	304		Standard Header Record reported	
13		179	202	A24	Product identification: $NIMBUS-7$NOPS$SPEC$NO$T	
14		203	208	A6	Specification numbering code X - Subsystem (7 for CZCS) X - Source Facility (same as Destination Facility)	

				X - Destination Facility (ex. 9 for Lannion) XX - Tape number in sequence for subsystem X - Tape description (ex. 1 for 9 track 1600 bpi)
15	209	215	A7	PDFC Designator: SQNO$
16	216	222	A7	Sequence number: AAXXXXX
17	223	224	A2	Tape copy number: -X (X = 1 or 2)
18	225	230	A6	Subsystem ID: $YYYY$
19	231	234	A4	Generation Facility ID: YYYY
20	235	242	A8	Destination Facility ID: TOYYYY
21	243	265	A23	Start date and time of data: $START$19XXDDDHHMMSS$
22	266	284	A19	End date and time of data: TO$19XX$DDD$HHMMSS$
23	285	304	A20	Date and time tape was generated: GEN$19XX$DDD$HHMMSS$
24	305	360	A56	Blanks

IMAGERY_VOLUME
QUICKLOOK_FILE
CATALOG_INFORMATION_RECORD

field or field-group name	start byte	last byte	format	DESCRIPTION AND EXPLANATION	CONTENT
1	1	6	A6	Equator Crossing Longitude (degree ; 0 to 360 eastward)	XXX.XX
2	7		A1	Blank	$
3	8	12	A5	Orbit Number	XXXXX
4	13		A1	Blank	$
5	14	19	A6	Aquisition Date (YYMMDD)	XXXXXX
6	20		A1	Blank	$
7	21	26	A6	Equator Crossing Time (HHMMSS)	XXXXXX
8	27		A1	Blank	$
9	28	33	A6	Image Start Time (HHMMSS)	XXXXXX
10	34		A1	Blank	$
11	35	40	A6	Image Stop Time (HHMMSS)	XXXXXX
12	41		A1	Blank	$
13	42		A1	Quick Look OK Status (Y = yes, N = no)	X
14	43		A1	Blank	$
15	44	46	A3	Percentage of Water in band 5 image	XXX
16	47		A1	Blank	$
17	48	50	A3	Percentage of Saturated Water in band 4 image	XXX
18	51		A1	Blank	$
19	52		A1	Data Quality Flag(*)	X
20	53		A1	Blank	$
21	54	56	A3	Number of Bad or Missing Lines	XXX
22	57		A1	Blank	$
23	58	63	A6	NW Corner Latitude of Q/L Image (degree)	XXX.XX
24	64		A1	Blank	$
25	65	71	A7	NW Corner Longitude of Q/L Image (degree ; 0 to 360 eastward)	XXXX.XX
26	72		A1	Blank	$
27	73	78	A6	SW Corner Latitude of Q/L Image (degree)	XXX.XX
28	79		A1	Blank	$
29	80	86	A7	SW Corner Longitude of Q/L Image (degree ; 0 to 360 eastward)	XXXX.XX
30	87		A1	Blank	$
31	88	93	A6	SE Corner Latitude of Q/L Image (degree)	XXX.XX
32	94		A1	Blank	$
33	95	101	A7	SE Corner Longitude of Q/L Image (degree ; 0 to 360 eastward)	XXXX.XX
34	102		A1	Blank	$
35	103	108	A6	NE Corner Latitude of Q/L Image (degree)	XXX.XX
36	109		A1	Blank	$
37	110	116	A7	NE Corner Longitude of Q/L Image (degree ; 0 to 360 eastward)	XXXX.XX
38	117		A1	Blank	$
39	118	123	A6	Latitude of Q/L Image Center (degree)	XXX.XX
40	124		A1	Blank	$

IMAGERY_VOLUME
QUICKLOOK_FILE
FILE_DESCRIPTOR_RECORD

field or field-group name		start byte	last byte	format	DESCRIPTION AND EXPLANATION	CONTENT
REC_IDE_SEGM	*	1	16		Record Identification Segment	
1		1	4	B4	Record Sequence Number	1
2		5		B1	File Code (according to CEOS definition)	63
3		6		B1	Record Code (according to CEOS definition)	192
4		7		B1	Mission Code (according to CEOS definition)	18
5		8		B1	Origin Code (according to CEOS definition)	18
6		9	12	B4	Length of this record	656
7		13	14	A2	ASCII/EBCDIC Flag	A$
8		15	16	A2	2 Blanks	$$
FDR_FIXED_SEGM	*	17	180		FILE DESCRIPTOR RECORD FIXED SEGMENT	
9		17	28	A12	Control Document Number for this Data File Format	NICZ-001-001
10		29	30	A2	Control Document Revision Number <XX>,where XX='$A', etc.	$A
11		31	32	A2	File Design Descriptor Revision Letter <XX>, (Initially '$A',then '$B',etc.)	$A
12		33	44	A12	Software Release Number NICZ-001-XXX, initially XXX=001,then 02,etc.	NICZ-001-001
13		45	48	I4	File Number	$$$1
14		49	64	A16	File Name	NI7$CZCS$Q/LDATA
15		65	68	A4	Record Sequence and Location Type Flag	FSEQ
16		69	76	I8	Sequence Number Location -n/a	
17		77	80	I4	Sequence Number Field Length -n/a	
18		81	84	A4	Record Code and Location Type Flag -n/a	
19		85	92	I8	Record Code Location -n/a	
20		93	96	I4	Record Code Field Length -n/a	
21		97	100	A4	Record Length and Location Type Flag -n/a	
22		101	108	I8	Record Length Location -n/a	
23		109	112	I4	Record Length Field Length -n/a	
24		113		A1	Flag indicating that data interpretation information is included within the file descriptor record. <X> ,where X=Y OR N ,for YES or NO	Y
25		114		A1	Flag indicating that data interpretation information is included within the file in record(s) other than the descriptor <X> ,where X=Y OR N ,for YES or NO	N
26		115		A1	Flag indicating that data display information is included within the file descriptor record. <X> ,where X=Y OR N ,for YES or NO	Y
27		116		A1	Flag indicating that data display information is included within the file in record(s) other	N

					than the file descriptor.	
					<X> ,where X=Y OR N ,for YES or NO	
28		117	180		Reserved Segment	Blanks
FDR_VARIA_SEGM	*	181	668		FILE DESCRIPTOR RECORD VARIABLE SEGMENT	
29		181	186	I6	Number of Catalog Information Records	$$$$$1
30		187	192	I6	Number of Q/L Processing Parameter Records	$$$$$1
31		193	198	I6	Number of Q/L Image Records	
32		199	204	I6	Catalog Information Record Length	$$$656
33		205	210	I6	Q/L Processing Parameter Record Length	$$$656
34		211	216	I6	Q/L Image Record Length	$$$656
35		217	232		Blanls	Blanks
QL_IMA_PAR	*	233	272		Q/L IMAGE PARAMETER	
36		233	236	I4	Number of bands of imagery in the Q/L image	$$$1
37		237	244	I8	Number of lines per Q/L image (one Q/L image record contains one line of Q/L image)	
38		245	248	I4	Number of left border pixels	$$$0
39		249	256	I8	Number of Q/L image pixels per line	$$$$$656
40		257	260	I4	Number of right border pixels	$$$0
41		261	264	I4	Number of top border lines	$$$0
42		265	268	I4	Number of bottom border lines	$$$0
43		269	272	A4	Interleaving indicator -n/a	
QL_REC_PAR	*	273	296		Q/L RECORD PARAMETER	
44		273	274	I2	Number of physical records per line	$1
45		275	276	I2	Number of physical records per multispectral line in the Q/L image records -n/a	$1
46		277	280	I4	Number of bytes of prefix data per record -n/a	
47		281	288	I8	Number of bytes of image data per Q/L image record	$$$$$656
48		289	292	I4	Number of bytes of suffix data per record -n/a	
49		293	296	I4	Prefix/suffix repeat flag -n/a	
50		297	464		Blanks	Blanks
QL_IMA_DESC	*	465	484		Q/L IMAGE DESCRIPTION	
51		465	468	I4	Number of bands per line	$$$1
					Q/L Image Pixel Group Data	
52		469	472	I4	Number of bits per pixel	$$$8
53		473	476	I4	Number of pixel per data group	$$$1
54		477	480	I4	Number of bytes per data group	$$$1
55		481	484	A4	Justification and order of pixels within data group	RJLR
QL_IMA_PXL_DESC	*	485	516		Q/L Image Pixel Data Description	
56		485	488	I4	Number of left fill bits within pixel	$$$0
57		489	492	I4	Number of right fill bits within pixel	$$$0
58		493	500	I8	Maximum data range of pixel values #	$$$$$63
59		501	508	A8	Left fill pixel bit data description -n/a	$$$$$$$$
60		509	516	A8	Right fill pixel bit data description -n/a	$$$$$$$$

data range 0 to 54 : CZCS band 2 water pixels

(simplified atmospheric correction applied)

data value 55 : CZCS band 4 saturated water pixels
data range 56 to 59 : land pixels derived from CZCS band 5
data range 60 to 63 : cloud pixels derived from CZCS band 5

61		517	656	Blanks	Blanks

IMAGERY_VOLUME
QUICKLOOK_FILE
CATALOG_INFORMATION_RECORD

field or field-group name	start byte	last byte	format	DESCRIPTION AND EXPLANATION	CONTENT
1	1	6	A6	Equator Crossing Longitude (degree ; 0 to 360 eastward)	XXX.XX
2	7		A1	Blank	$
3	8	12	A5	Orbit Number	XXXXX
4	13		A1	Blank	$
5	14	19	A6	Aquisition Date (YYMMDD)	XXXXXX
6	20		A1	Blank	$
7	21	26	A6	Equator Crossing Time (HHMMSS)	XXXXXX
8	27		A1	Blank	$
9	28	33	A6	Image Start Time (HHMMSS)	XXXXXX
10	34		A1	Blank	$
11	35	40	A6	Image Stop Time (HHMMSS)	XXXXXX
12	41		A1	Blank	$
13	42		A1	Quick Look OK Status (Y = yes, N = no)	X
14	43		A1	Blank	$
15	44	46	A3	Percentage of Water in band 5 image	XXX
16	47		A1	Blank	$
17	48	50	A3	Percentage of Saturated Water in band 4 image	XXX
18	51		A1	Blank	$
19	52		A1	Data Quality Flag(*)	X
20	53		A1	Blank	$
21	54	56	A3	Number of Bad or Missing Lines	XXX
22	57		A1	Blank	$
23	58	63	A6	NW Corner Latitude of Q/L Image (degree)	XXX.XX
24	64		A1	Blank	$
25	65	71	A7	NW Corner Longitude of Q/L Image (degree ; 0 to 360 eastward)	XXXX.XX
26	72		A1	Blank	$
27	73	78	A6	SW Corner Latitude of Q/L Image (degree)	XXX.XX
28	79		A1	Blank	$
29	80	86	A7	SW Corner Longitude of Q/L Image (degree ; 0 to 360 eastward)	XXXX.XX
30	87		A1	Blank	$
31	88	93	A6	SE Corner Latitude of Q/L Image (degree)	XXX.XX
32	94		A1	Blank	$
33	95	101	A7	SE Corner Longitude of Q/L Image (degree ; 0 to 360 eastward)	XXXX.XX
34	102		A1	Blank	$
35	103	108	A6	NE Corner Latitude of Q/L Image (degree)	XXX.XX
36	109		A1	Blank	$
37	110	116	A7	NE Corner Longitude of Q/L Image (degree ; 0 to 360 eastward)	XXXX.XX
38	117		A1	Blank	$
39	118	123	A6	Latitude of Q/L Image Center (degree)	XXX.XX
40	124		A1	Blank	$

41	125	131	A7	Longitude of Q/L Image Center (degree ; 0 to 360 eastward)	XXXX.XX
42	132		A1	Blank	$
43	133	135	A3	Percentage of Band 5 Water Pixels in NW Quadrant	XXX
44	136		A1	Blank	$
45	137	139	A3	Percentage of Band 5 Water Pixels in SW Quadrant	XXX
46	140		A1	Blank	$
47	141	143	A3	Percentage of Band 5 Water Pixels in SE Quadrant	XXX
48	144		A1	Blank	$
49	145	147	A3	Percentage of Band 5 Water Pixels in NE Quadrant	XXX
50	148		A1	Blank	$
51	149	151	A3	Percentage of Band 4 Saturated Water Pixels in NW Quadrant	XXX
52	152		A1	Blank	$
53	153	155	A3	Percentage of Band 4 Saturated Water Pixels in SW Quadrant	XXX
54	156		A1	Blank	$
55	157	159	A3	Percentage of Band 4 Saturated Water Pixels in SE Quadrant	XXX
56	160		A1	Blank	$
57	161	163	A3	Percentage of Band 4 Saturated Water Pixels in NE Quadrant	XXX
58	164		A1	Blank	$
59	165	178	A14	Archived Optical Disk Reference Number	XXXXXXXXXXXXXX
60	179		A1	Blank	$
61	180	185	A6	Tilt Angle (degree)	XXX.XX
62	186		A1	Blank	$
63	187		A1	Gain (1,2,3 or 4)	X
64	188		A1	Blank	$
65	189	195	A7	Sun Azimuth of Frame Center (degree)	XXXX.XX
66	196		A1	Blank	$
67	197	203	A7	Sun Zenith of Frame Center (degree)	XXXX.XX
68	204		A1	Blank	$
69	205		A1	Product Level (1 = Level 1 CRT)	X
70	206		A1	Blank	$
71	207	208	A2	Station Code	XX
72	209	656		Blanks	Blanks

(*) At present, data quality field is filled with 0. The definition of this field will be decided later.

IMAGERY_VOLUME
QUICKLOOK_FILE
QUICKLOOK_PROCESSING_PARAMETER_RECORD

field or field-group name	start byte	last byte	format	DESCRIPTION AND EXPLANATION	CONTENT
1	1	12	A12	Algorithm ID Number QUICKLOOK$<XX>, where XX = 01, then 02, etc.	
2	13	24	F12.6	Rayleigh Optocal Thickness of Band 1	0.2101
3	25	36	F12.6	Rayleigh Optocal Thickness of Band 2	0.1125
4	37	48	F12.6	Rayleigh Optocal Thickness of Band 3	0.0903
5	49	60	F12.6	Rayleigh Optocal Thickness of Band 4	0.0415
6	61	72	F12.6	Ozone Optical Thickness of Band 1	0.0068
7	73	84	F12.6	Ozone Optical Thickness of Band 2	0.0213
8	85	96	F12.6	Ozone Optical Thickness of Band 3	0.0346
9	97	108	F12.6	Ozone Optical Thickness of Band 4	0.0202
10	109	120	F12.6	Extraterrestrial Solar Irradiance of Band 1 (uW/cm^2*nm)	186.42
11	121	132	F12.6	Extraterrestrial Solar Irradiance of Band 2	185.34
12	133	144	F12.6	Extraterrestrial Solar Irradiance of Band 3	184.76
13	145	156	F12.6	Extraterrestrial Solar Irradiance of Band 4	151.52
14	157	168	F12.6	Sensitivity Decay Parameter 1 of Band 1 (a)	1.023
15	169	180	F12.6	Sensitivity Decay Parameter 1 of Band 2	0.951
16	181	192	F12.6	Sensitivity Decay Parameter 1 of Band 3	0.942
17	193	204	F12.6	Sensitivity Decay Parameter 1 of Band 4	1.000
18	205	216	F12.6	Sensitivity Decay Parameter 2 of Band 1 ($b*10^5$)	1.908
19	217	228	F12.6	Sensitivity Decay Parameter 2 of Band 2	0.793
20	229	240	F12.6	Sensitivity Decay Parameter 2 of Band 3	0.491
21	241	252	F12.6	Sensitivity Decay Parameter 2 of Band 4	0.000
22	253	264	F12.6	Sensitivity Decay Parameter 3 of Band 1 ($c*10^{10}$)	-0.556
23	265	276	F12.6	Sensitivity Decay Parameter 3 of Band 2	-0.386
24	277	288	F12.6	Sensitivity Decay Parameter 3 of Band 3	-0.211
25	289	300	F12.6	Sensitivity Decay Parameter 3 of Band 4	0.000
26	301	656		Blanks	Blanks

IMAGERY_VOLUME
QUICKLOOK_FILE
QUICKLOOK_IMAGE_RECORD

field or field-group name	start byte	last byte	format	DESCRIPTION AND EXPLANATION	CONTENT
1	1	656	65681	Quicklook Image Data of 1 line (= 656 pixels)	

IMAGERY_VOLUME
CRTT_DATA_FILE
CRTT_DOCUMENTATION_RECORD

Field or Field Group Name	Start Byte	Last Byte	Format	Description and Explanation	Content
1	1	2		Physical Record Number (MSB 12 bits;binary integer) and Spares(LSB 4 bits; set to 0)	
2	3			File Control (MSB 2 bits) The MSB(Bit1) will be set to 1 to indicate the last record written in a file. Record I.D. (LSB 6 bits;binary integer) 1 = leading documentation file 2 = trailing documentation file	
3	4		B1	Valid Data Flag 0(all bits off) = data is invalid 255(all bits on) = data is valid	
4	5	7	3B1	Target Area Code Each code will describe a target area which was covered by the data in the file.	
5	8		B1	File Number contained in the tape according to NASA tape format	
6	9	12	B4	Tape Sequence Number contained in NASA Standard Header Record	
7	13	16	B4	Film Frame Number	
8	17	18	B2	Starting Year Number For example,1978	
9	19	20	B2	Starting GMT Day Number Starts at 1 on Jan.1 and increments by 1 for each day of the year (1 to 366)	
10	21	24	B4	Starting Time in Milliseconds GMT. This number is in milliseconds of the GMT,and for the start of the CRTT data file	
11	25	28	B4	Increment in Milliseconds from the start time of the segment to the last data scan of the segment. (*)	
12	29	30	B2	Orbit Number	
13	31	32	B2	Number of Scans in File (*)	
14	33	34	B2	Geodetec Latitude Center ranging from 0 at the south pole to 18000(180 deg.*100) at the north pole (LSB weight is 0.01 deg) (*)	
15	35	36	B2	Longitude Center from 0 at the Greenwich Meridian eastward to 36000 (360 deg.*100) (LSB weight is 0.01 deg) (*)	
16	37	38	B2	Geodetic Latitude of Corner(left of truck,first in time), with scaling identical to field 14.	
17	39	40	B2	Longitude of Corner (left of truck,first in time), with scaling identical to field 15.	
18	41	42	B2	Geodetic Latitude of Corner(right of truck,first in time), with scaling identical to field 14.	
19	43	44	B2	Longitude of Corner (right of truck,first in time), with scaling identical to field 15.	
20	45	46	B2	Geodetic Latitude of Corner(left of truck,last	

				in time), with scaling identical to field 14.(*)
21	47	48	B2	Longitude of Corner (left of truck,last in time) with scaling identical to field 15. (*)
22	49	50	B2	Geodetic Latitude of Corner(right of truck,last in time), with scaling identical to field 14.(*)
23	51	52	B2	Longitude of Corner (right of truck,last in time) with scaling identical to field 15. (*)
24	53			ILT FLAGS Bit 1(MSB) 0 = at least one set of data not available 1 = all relevant data available Bit 2 1 = time corrections available Bit 3 1 = solar ephemeris available Bit 4 1 = data quality loss available Bit 5 1 = VIP data available Bit6-7 00 = spacecraft ephemeris not available 01 = spacecraft ephemeris predicteve 11 = spacecraft ephemeris definitive Bit 8 1 = rate coefficients available
25	54			Parameter Presence Code Bit 1(MSB) 1 = Ch.1 data is present 0 = Ch.1 data is absent Bit 2 1 = Ch.2 data is present 0 = Ch.2 data is absent Bit 3 1 = Ch.3 data is present 0 = Ch.3 data is absent Bit 4 1 = Ch.4 data is present 0 = Ch.4 data is absent Bit 5 1 = Ch.5 data is present 0 = Ch.5 data is absent Bit 6 1 = Ch.6 data is present 0 = Ch.6 data is absent Bit 7-8 Spare 0
26	55	56	B2	Number of Missing Scans (*)
27	57	58	B2	Number of Scans Missing Ch.1 data (*)
28	59	60	B2	Number of Scans Missing Ch.2 data (*)
29	61	62	B2	Number of Scans Missing Ch.3 data (*)
30	63	64	B2	Number of Scans Missing Cn.4 data (*)
31	65	66	B2	Number of Scans Missing Ch.5 data (*)
32	67	68	B2	Number of Scans Missing Ch.6.data (*)
33	69		B1	Algorithm I.D.Number of Ch.1 Calibration
34	70		B1	Algorithm I.D.Number of Ch.2 Calibration
35	71		B1	Algorithm I.D.Number of Ch.3 Calibration
36	72		B1	Algorithm I.D.Number of Ch.4 Calibration
37	73		B1	Algorithm I.D.Number of Ch.5 Calibration
38	74		B1	Algorithm I.D.Number of Ch.6 Calibration
39	75		B1	Algorithm I.D.Number of Geographic Location
40	76		B1	Undefined
41	77	80	B4	Decom Run Number
42	81	84	B4	Decom Reel Number
43	85	86	B2	Number of HDT Sync Losses occered reading 2 minutes period of the HDT tape (*)

44	87	88	B2	Number of HDT Parity Errors detected on the HDT tape during the 2 minutes period. (*)	
45	89	90	B2	Number of WBVT Sync Losses detected by the pre-processor during generation of 2 minutes period of HDT tape. (*)	
46	91	92	B2	Number of WBVT Bit Slip Occurences detected by the pre-processor during generation of 2 minutes period of HDT tape. (*)	
47	93	156	32B2	Sub-Commutated 32 Housekeeping Data,scaled with 8 fractional bits	
48	157			Spare	0
49	158			Base Plate Temperature Flag 0(all bits off) = baseplate temperature is a normal preset value 255(all bits on) = temperature is obtained from the ILT	
50	159	160	B2	Baseplate Temperature This data has a fractional part of 7 bits.	
51	161	696		Spares	Blanks
52	697		B1	CZCS gain setting A binary integer value of 1,2,3 or 4	
53	698		B1	CZCS Threshold Function Status 1 = off, 2 = on	
54	699	700	B2	CZCS Tilt Angle Two's complement integer,with LSB weight of 1/1000 deg.	
55	701	702	B2	The year(4 digit) associated with the geographic scene center. (*)	
56	703	704	B2	Scene Center Day of Year (1 to 366) (*)	
57	705	708	B4	The Milliseconds of Day associated with the geographic center of the scene(0 to 86399999) (*)	
58	709	710	B2	Solar Elevation at the Geographic Scene Center Values range from -90 to +90 deg.,represented by two's complement integer,with LSB weight of 1/100 deg. (*)	
59	711	712	B2	Solar Azimuth at the Geographic Scene Center Values range from 0 to 360 deg. Unsigned binary integer,with LSB weight 1/100 deg. (*)	
60	713	718	3B2	The Spacecraft Attitude(Roll,Pitch and Yaw) at the Geographic SCENE Center. Values range from -32 to +32 deg.,represented by two's complement integer,with LSB weight of 1/1000 deg. (*)	
61	719		B1	Tick Label Flag for the Top/Bottom Edges (*) 1 = tick labels are latitude 2 = tick labels are longitude	
62	720		B1	Tick Labe Flag for the Left/Right Edges (*) 1 = tick labels are latitude 2 = tick labels are longitude	
63	721	722	B2	Latitude of Top Left Tick Label Values range from 0 deg. at the south pole to 180 deg. at the north pole. Unsigned binary integer,with LSB weight of	

				1/100 deg. (*)
64	723	724	B2	Latitude of Top Right Tick Label (*)
65	725	726	B2	Latitude of Bottom Left Tick Label (*)
66	727	728	B2	Latitude of Bottom Right Tick Label (*)
67	729	730	B2	Longitude of Left Top Tick Label Values range from 0 to 360 deg.eastward. Unsigned binary integer,with LSB weight of 1/100 deg. (*)
68	731	732	B2	Longitude of Left Bottom Tick Label (*)
69	733	734	B2	Longitude of Right Top Tick Label (*)
70	735	736	B2	Longitude of Right Bottom Tick Label (*)
71	737		B1	Top Tick Increments in degrees between successive ticks on each edge of the scene. Values may be 1,2,4 or 8 deg. Unsigned binary integers,with LSB weight of 1 deg. (*)
72	738		B1	Bottom Tick Increments (*)
73	739		B1	Left Tick Increments (*)
74	740		B1	Right Tick Increments (*)
75	741	794	27B2	Top Tick Location Arrays The location of the first tick is specified relative to the left end of the edge; the location of succeeding tick is specified relative to the position of the preceeding tick. Values are unsigned binary integers,representing numbers of pixels. (*)
76	795	848	27B2	Bottom Tick Location Arrays (*)
77	849	902	27B2	Left Tick Location Arrays The location of the first tick is specified relative to the top end of the edge; the location of succeeding tick is specified relative to the position of the proceeding tick. Values are unsigned binary integers, representing numbers of scan lines.
78	903	956	27B2	Right Tick Location Arrays
79	957	964	2B4	Slope and Intercept of Ch.1 for the conversion of the ch.1 data to radiometric units (mw/cm**2-ster-um) Signed and 7 bits whole part and 24 bits fractional.
80	965	972	2B4	Spope and Intercept of Ch.2
81	973	980	2B4	Slops and Intercept of Ch.3
82	981	988	2B4	Slope and Intercept of Ch.4
83	989	996	2B4	Slope and Intercept of Ch.5
84	997	1004	2B4	Slope and Intercept of Ch.6
85	1005	1516	256B2	Temperature Conversion Table Contains the temperature in degrees Celsius for the corresponding count of ch.6 data. This data has 8 bits whole part and 8 bits fractional part.
86	1517	1520	2B2	Image Enhancement Slope and Intercept of Ch.1 for display purpose, represented by two's complement integers. LSB weights are 1/256 for slopes and 1/16 for

					intercepts.
87		1521	1524	2B2	Image Enhancement Slope and Intercept of Ch.2
88		1525	1528	2B2	Image Enhancement Slope and Intercept of Ch.3
89		1529	1532	2B2	Image Enhancement Slope and Intercept of Ch.4
90		1533	1536	2B2	Image Enhancement Slope and Intercept of Ch.5
91		1537	1540	2B2	Image Enhancement Slope and Intercept of Ch.6
92		1541	1548		Spares - Blanks
ILT_TYPA_SEGM	*	1549	5328		CZCS ILT Type A Record
93		1549	1550		Physical Record Number(MSB 12 bits) and Spares (set to 0)
94		1551			Record I.D. Bit 1(MSB)-2 File Status Bit Bit 3-8 01 = Type A data record 02 = Data quality loss record 03 = Type A dummy record 11 = Tppe B data record(SOBV/TOMS) 13 = Type B dummy record 06 = Type D data record(SAM II) 31 = Time correction record
95		1552	1554	B3	Data Orbit Number
96		1555		B1	GMT Year (last 2 digits only) corresponding to the data contained in item 101 thru 113
97		1556	1557	B2	GMT Start Time of Year expressed in units of 2 hours(1/12 of a day) corresponding the data contained in item 101 thru 113
98		1558	1560	B3	GMT Start Milliseconds of 1/12 day corresponding the data contained in item 101 thru 113
99		1561	1563	B3	Spacecraft Time given in 1/12 days to be added to spacecraft time to get the corresponding spacecraft time for the associated data in item 101 thru 113. (MSB will be used as the sign bit)
100		1564	1566	B3	Spacecraft Clock Time in milliseconds to be added to spacecraft 1/12 days above to get the corresponding time for the associated data in item 101 thru 113. (MSB will be used as the sign bit)
101		1567	1569	B3	X co-ordinate of spacecraft location (in earth centered inertial co-ordinates true of date) Expressed in meters.
102		1570	1572	B3	Y co-ordinate of spacecraft location
103		1573	1575	B3	Z co-ordinate of spacecraft location
104		1576	1578	B3	Greenwich Hour Angle from Aries The angle between the inertial X-axis and the earth fixed x-axis,expressed in 10^{-6} radians.
105		1579	1581	B3	The X-component of the spacecraft velocity in km/second scaled by 2^{18}. The MSB will be used as the sign bit.
106		1582	1584	B3	The Y-component of the spacecraft velocity
107		1585	1587	B3	The Z-component of the spacecraft velocity
					If S/C ephemeris data is not available,each 24bits of items 101 thru 107 will be left at its initial

value of 5777777777_8.

108		1588	1593	B6 Sun Right Ascension(Azimuth) The angle measured in the plane of the equator from vernal equinox to a plane normal to the equator containing the sun(true of date) and positive counterclockwise as seen from +Z(north pole). Expressed as two 24 bit words. The first 24 bits(X1) will be radians scaled by 221. The second 24 bit(x2) word will be radians scaled by 229. To get 29 bit precision, Y let Y = X1+x2 if X1>0 ; Y = X1-X2 if X1<0 If solar ephemeris data is not available, each 24 bits is left at its initial value=5777777777_8
109		1594	1599	B6 Sun Declination(Elevation) The angle between the sun and the inertial equator measureed in a plane normal to the inertial equator containing the sun and the earth center (true of date), positive above equator. Same scaling as item 107. If solar ephemeris data is not available, each 24 bits is left at its initial value = 5777777777_8
110		1600	1602	B3 Sub-satellite Longitude East longitude of normal from spacecraft to ellipsoid,expressed in 10^{-6} radians. Equatorial radius = 6378.144km Polar radius = 6356.759km
111		1603	1605	B3 Sub-satellite Geocentric Latitude Expressed same as in item 109.
112		1606	1608	B3 Altitude The distance from the spacecraft to ellipsoid measured along the normal,expressed in meters. If S/C ephemeris is not available, each 24 bits of item 110 thru 112 is left at its initial value = 5777777777_8.
113		1609	1611	B3 Spacecraft Day/Twilight/Night Status 0 = Day (Spacecraft & subtract point both illuminated 1 = Twilight (Spacecraft illuminated,sabtract point in shade) 2 = Night (Spacecraft & Subtract point both in shade)
114		1612	1656	Repeat of item 101 to 113 for 60 GMT seconds after the GMT given in item 96 thru 98.
115		1657	1701	Repeat of item 101 to 113 for 120 GMT seconds after the GMT given in item 96 thru 98,but only if 3 minutes of ephemeris data coincide with the 2 minutes 8 secondstime period contained in this record. Otherwise, each 24 bits will be 5777777777_8.
116		1702	1704	B3 GMT(MS) of Start of First VIP Major Frame This is given as increment in milliseconds from

				the time given in item 96-98. This number will always negative except when ILT data record starts exactly on the GMT integer minutes. It may cause the day count to change.	
117		1705	1707	B3	Spacecraft Time(1/12 Days) of Start of First VIP Major Frame to be added to the next 24-bit word (item 118). This may be negative and may cause the day count to change.
118		1708	1710	B3	Spacecraft Time(MS) of Start of First VIP Major Frame to be added to the item 117. This provides the start time of data which follows in item 119 thru 131. If this word is negative,no VIP data was available. The MSB will be used as the sign bit.
119		1711	1730		VIP Major Frame Q/C
120		1731			Spare 11111111_2
121		1732	1755		Sensor-Spacecraft Status
122		1756	1767		THIR Housekeeping Data
123		1768	1772		LIMS Housekeeping Data
124		1773		B1	CZCS Baseline Temperature The value is in raw counts
125		1774	1776		Spacecraft Pitch Bit 1(MSB)-2 ; source code 00 = ACS data only 01 = ACS and DSAS data 10 = No ACS data(No VIP Data) In this case,entire 24 bits are set to 5777777_8. 11 = Pitch bias inserted Bit 3-24 ; Signed binary integer radian value multiplied by 10^6.
126		1777	1779		Spacecraft Yaw
127		1780	1782		Spacecraft Roll
128		1783	1785		Spacecraft Pitch Rate Bit 1(MSB)-2 ; 00 = Normal Computation 01 = Not Computed because of gating 11 = Not computed because CZCS turned on or off about this time. 10 = Not computed because no ACS data was available Bit 3-24 ; Rate of change of S/C pitch. Signed binary integer radians per second multiplied by 10^6.
129		1786	1788		Spacecraft Roll Rate
130		1789	1791	B3	DSAS Declination to Sun (Azimuth Angle) Tenth-of-degrees relative to the S/C axes,and ranges from -1800 to 1800 with negative values for sun directions to the left of S/C track(-Y hemisphere). The azimuth angle is zero when sun direction is aligned with S/C XZ-plane. Set to 5777777_8 if no data is available.
131		1792	1794	B3	DSAS Declination to Sun (Elevation Angle)

				Tenth-of-degrees relative to the S/C axes,and range from -1800 to 1800 with positive values corresponding to sun directions below the S/C XY-plane(+Z hemisphere). Set to 5777777_8 if no data is available.
132	1795	2109		15 additional sets of item 125 thru 131 for a total of 16 sets. Each set is for 1 spacecraft second after previous set(next second).
133	2110	4944		7 additional sets of items 117 thru 132 for a total of 8 sets for 2 min.8 sec of coverage.
134	4945	4947	B3	Start Data Quality Loss Time The start time of an interval contained in this 2 min.8 sec period,where data quality loss has occurred,expressed as a GMT(milliseconds) increment from time given in item 116.The value should be multiples of 40 milliseconds.
135	4948	4950	B3	End Data Quality Loss Time The end time(milliseconds increment from time in item 116) of the data quality loss interval descrived above.
136	4951	5316		61 additional pairs of data quality loss intervals as descrived in item 134 and 135. Filled with 24 bit word 5777777_8 if no more intervals)
137	5317	5319		Data Quality Loss IntervalCount,and Next Record Flag Bit1(MSB)-12 ; Integer value indicating number of valid bit slip intervals in this record.(binary integer) Bit13-24 ; Next Data Flag
138	5320	5322		Input Data Flags giving the information about the six sources of input data used to generate this record. Bit1(MSB)-2 ; Time Corrections 00 - No, 01 - Yes Bit 3-4 ; Solar Ephemeris 00 - No, 01 - Yes Bit 5-6 ; Data Quality Loss Information 00 - No, 01 - Yes Bit 7-8 ; UFO-ILT(VIP data & SAM II data) 00 - No, 01 - Yes Bit 9-10 ; Spacecraft Ephemeris 00 - No, 01 - Predictive, 11 - Definitive Bit 11-12 ; Rate Coefficients 00 - No, 01 = Yes
139	5323	5325		Stripper Information Flag
140	5326	5328		CHECKSUM Result of adding all previous 24 bit words together.

IMAGERY_VOLUME
CRTT_DATA_FILE
IMAGE_RECORD

Field or Field-Group Name	Start Byte	Last Byte	Format	Description and Explanation	Content
1	1	2		Physical Record Number Bit 1(MSB)-Bit 12 : Physical Record Number Starts at 2 and increments by 1's up to a maximum of 971 physical records. (binary integer) Bit 13-Bit 16(LSB) : Spares	
2	3			File Control Status and Record I.D. Bit 1(MSB)-2 : File Control Status Bit 1 ; 1 = This record is the last one written in CRTT data file Bit 3-8 : Record I.D. 1 = Leading Documentation Record 2 = Trailing Documentation Record 7 = Data Record	
3	4			Calibration Quality Summary Bit 1(MSB) 1 = Questionable Ephemeris Bit 2 1 = Questionable Spacecraft Attitude Bit 3 1 = At least one of the expected channels not present Bit 4 1 = At least one of the expected channels had active calibration values outside expected range Bit 5 1 = At least one of the expected channels had voltage staircase count outside expected range Bit 6 1 = Undefined	
4	5	6	B2	Scan Sequence Number (from 1 to 970) Missing scan lines will be accounted for.	
5	7			Spare	0
6	8		B1	Time Update Flag Indicates the trimester in which the time update occurred in the CZCS/ZIP major frame. 0 = no update occurred in this scan	
7	9	10	B2	Year Number (in the form "1978")	
8	11	12	B2	Day Number (1 to 366)	
9	13	16	B4	The Number of Milliseconds since the beginning of the GMT day	
10	17	18	B2	Subcommutated Data Value One of the 32 housekeeping data values that repeat every 32 scan lines, represented 8 whole and 8 fractional bits	
11	19		B1	Subcom I.D. Number The channel number for the subcommuted housekeeping data (0 to 31)	
12	20			Spare	0

13	21	52	1682	Voltage Staircase Counts of Ch.1 from step 1 to step 16. Each count value is an average of the last two samples of the 4 data samples. Each value is 16 bits with 8 bits whole and 8 bits fractional parts.
14	53	84	1682	Voltage Staircase Counts of Ch.2
15	85	116	1682	Voltage Staircase Counts of Ch.3
16	117	148	1682	Voltage Staircase Counts of Ch.4
17	149	180	1682	Voltage Staircase Counts of Ch.5
18	181	212	1682	Voltage Staircase Counts of Ch.6
19	213	214	B2	Ch.1 Calibration Lamp Radiance Count The data is an average of 4 samples. The data has MSB 8 bits whole part and LSB 8 bits fractional part.
20	215	216	B2	Ch.2 Calibration Lamp Radiance Count
21	217	218	B2	Ch.3 Calibration Lamp Radiance Count
22	219	220	B2	Ch.4 Calibration Lamp Radiance Count
23	221	222	B2	Ch.5 Calibration Lamp Radiance Count
24	223	224	B2	Ch.6 Blackbody Calibration Count
25	225	226	B2	Blackbody Temperature Count The data is an average of the 4 samples THe data has 8 bits whole and 8 bits fractional part.
26	227	228		Bit Slip/Loss of Sync Summary Bit 1(MSB) 1 = 1 or more minor frames had a bit slip or loss of sync 0 = no bit slip or loss of sync Bit 2 1 = bit slip or loss of sync at 15th minor frame 0 = no bit slip or loss of sync at 15th minor frame . . . Bit 16 1 = bit slip or loss of sync at 1st minor frame 0 = no bit slip or loss of sync at first minor frame
27	229	230	B2	Number of HDT Sync Losses detected processing this scan
28	231	232	B2	The Count of HDT Parity Errors detected processing this scan
29	233	234	B2	The Count of WBVT Sync Losses detected by the pre-processor processing this scan
30	235	236	B2	The Count of WBVT bit slip detected by the pre-processor processing this scan
31	237	544	77B4	Geodetic Latitudes for 77 successive Anchor Point Pixels. Each value ie a signed 32 bit binary integer with 9 bits whole and 22 bits fractional.
32	545	852	77B4	Longitudes for 77 successive Anchor Point Pixels Each value is a signed 32 bits binary integer

				with 9 bits whole and 22 bits fractional.
33	853	854	B2	Pixel Number at Nadir Consists of 11 bits whole part and 5 bits fractional. The maximum resolution is 0.04 deg. The number is counted from the beginning of the earth scan.
34	855			Calibration Quality Flag for Ch.1
				Bit 1(MSB)-2 Undefined 0
				Bit 3 1 = data expected but not present
				Bit 3-8 Undefined 0
35	856			Calibration Quality Flag for Ch.2
36	857			Calibration Quality Flag for Ch.3
37	858			Calibration Quality Flag for Ch.4
38	859			Calibration Quality Flag for Ch.5
39	860			Calibration Quality Flag for Ch.6
40	861	2828	196881	Data Values of Ch.1
42	2929	4896	196881	Data Values of Ch.2
43	4897	6864	196881	Data Values of Ch.3
44	6865	8832	196881	Data Values of Ch.4
45	8833	10800	196881	Data Values of Ch.5
46	10801	12768	196881	Data Values of Ch.6

IMAGERY_VOLUME
OZONEDATA_FILE
FILE_DESCRIPTOR_RECORD

Field or Field-Group Name	Start Byte	Last Byte	Format	Description and Explanation	Content
REC_IDE_SEGM	1	16		Record Identification Segment	
1	1	4	B4	Record Sequence Number	1
2	5		B1	File Code (according to CEOS)	63
3	6		B1	Record Code (according to CEOS)	192
4	7		B1	Mission Code (according to CEOS)	18
5	8		B1	Origin Code (according to CEOS)	18
6	9	12	B4	Length of this record	1764
7	13	14	A2	ASCII/EBCDIC Flag	A$
8	15	16	A2	2 Blanks	$$
FDR_FIXED_SEGM	17	180		File Descriptor Record Fixed Segment	
9	17	28	A12	Control Document Number for this Data File Format	NICZ-001-001
10	29	30	A2	Control Document Revision Number <XX>,where XX="$A",etc.	$A
11	31	32	A2	File Design Descripter Revision Letter <XX>,(Initially '$A',then '$B',etc.)	$A
12	33	44	A12	Software Release Number NICZ-001-XXX, initially XXX=001,then 002,etc.	
13	45	48	I4	File Number	$$$3
14	49	64	A16	File Name	NI7$CZCS$OZONEDT
15	65	68	A4	Record Sequence and Location Type Flag	FSEQ
16	69	76	I8	Sequence Number Location	$$$$$$$5
17	77	80	I4	Sequence Number Field Length	$$$2
18	81	84	A4	Record Code and Location Type Flag -n/a	
19	85	92	I8	Record Code Location -n/a	
20	93	96	I4	Record Code Field Length -n/a	
21	97	100	A4	Record Length and Location Type Flag -n/a	
22	101	108	I8	Record Length Locaton -n/a	
23	109	112	I4	Record Length Field Length -n/a	
24	113		A1	Flag indicating that data interpretation information is included within the file descripter record. <X> , where X=Y or N ,for yes or no	Y
25	114		A1	Flag indicating that data interpretation information is included within the file in record other than the descripter <X> , where X=Y or N ,for yes or no	N
26	115		A1	Flag indicating that data display information is included within the file descripter record <X> ,where X=Y or N ,for yes or no	N
27	116		A1	Flag indicating that data dislay information is included within the file record other than the file descripter.	N

					<X> , where X=Y or N ,for yes or no.	
28		117	180		Reserved Segment	Blanks
FDR_VARIA_SEGM	*	181	1764		File Descriptor Record Variable Segment	
29		181	186	I6	Number of Ozonedata Records	$$$180
30		187	192	I6	Number of Trailer Records	$$$$$4
31		193	198	I6	Ozonedata Record Length	$$1764
32		199	204	I6	Trailer Record Length	$$1764
33		205	208	I4	Location of the number of grid cells in the latitude zone	$$13
34		209	212	I4	Field Length of the Location of the number of grid cells in the latitude zone.	$$$2
35		213	216	I4	Location of the number of observations permitted per cell.	$$15
36		217	220	I4	Field Length of the Location of the number of observations permitted per cell.	$$$2
37		221	1764		Blanks	Blanks

IMAGE_VOLUME
OZONEDATA_FILE
OZONEDATA_RECORD

Field or Field-Group Name		Start Byte	Last Byte	Format	Description and Explanation	Content
OZON_HDR_SEGM	*	1	20		Header Information Segment	
1		1	4		IPD Word (Packed Integer) Bit 1(MSB)-12 Physical Record Block Number Bit 13-16 Spare Bit 17 Record Control 1 = last block on file Bit 18 File Control Bit 19-24 Record I.D. 61 = data record 62 = trailer record 63 = trailer file record Bit 25-32 Spare	0000 00000000_2
2		5	6	B2	Record Sequence Number 1 to 180 for data records -180 for data trailer record -1 for trailer file Two's complement integer	
3		7	8	B2	Latitude for Center of the 1 deg zone Value range from -895 at 89-90 S zone to 895 at 89-90 N zone (in degrees*10). Two's complement integer.	
4		9	10	B2	Longitude for the center of the first cell (in degrees) Two's complement integer.	-180
5		11	12	B2	Longitude grid size for the zone (in degrees*100)	
6		13	14	B2	N; The number of grid cells in the latitude zone	
7		15	16	B2	M; The number of observations permitted per cell	
8		17	18	B2	Year (4 digits).	
9		19	20	B2	Day of the year (from 1 to 366).	
OZONDATA_SEGM	*	21	1764		Ozoneata for the zone	
10		21	22	B2	GMT time of primary observation for the first cell in the zone (in GMT hour*1000).	
11		23	24	B2	Total Ozone(matm-cm) corresponding to the observation in byte 21-22.	
12		25	26	B2	Reflectivity corresponding to the observation in byte 21-22 (in percent).	
13		27	6N+20		Same as byte 21 to 26 except for the second to Nth cells in the zone.	
14		6N+21	1748		Same as byte 21 to 6N+20 except for the 2nd to Mth observation if M is larger than 1 for the zone.	
15		1748	1764	882	Spare Words (two's complement integer)	-777

IMAGE_VOLUME
OZONEDATA_FILE
OZONE_TRAILER_RECORD

Field or Field-Group Name	Start Byte	Last Byte	Format	Description and Explanation	Content
1	1	4		IPD Word (Packed Integer)	
				Bit 1(MSB)-12 Physical Record Block Number	
				Bit 13-16 Spare	0000_2
				Bit 17 Record Control	
				1 = last block on file	1
				Bit 18 File Control	
				Bit 19-24 Record I.D.	62
				61 = data record	
				62 = trailer record	
				63 = trailer file record	
				Bit 25-32 Spare	00000000_2
2	5	6	B2	Record Sequence Number	-180
				1 to 180 for data records	
				-180 for data trailer record	
				-1 for trailer file	
				Two's complement integer	
3	7	1764		Spare Words (two's complement integer)	-777

NULL_VOLUME
VOLUME_DIRECTORY_FILE
VOLUME_DESCRIPTOR_RECORD

field or field-group name		start byte	last byte	format	DESCRIPTION AND EXPLANATION	CONTENT
REC_IDE_SEGM	*	1	16		Record Identification Segment	
1		1	4	B4	Record Sequence Number	1
2		5		B1	File Code (according to CEOS definition)	192
3		6		B1	Record Code (according to CEOS definition)	192
4		7		B1	Mission Code (according to CEOS definition)	63
5		8		B1	Origin Code (according to CEOS definition)	18
6		9	12	B4	Length of this record	360
7		13	14	A2	ASCII/EBCDIC Flag	A$
8		15	16	A2	2 Blanks	$$
VOL_DOC_SEGM	*	17	44		Volume Documentation Segment	
9		17	28	A12	Superstructure control document number	CCB-CCT-0002
10		29	30	A2	Superstructure control document revision number	$F
11		31	32	A2	Superstructure record format revision letter <XX> (initially '$A',then '$B',etc...)	$A
12		33	44	A12	Software release number:NICZ-001-XXX initially XXX=001,then 002,etc	
VOL_IDE_SEGM	*	45	172		Volume Identification Segment	
13		45	60	A16	Physical Volume identification:<MNNS$YYDDDHHMM$$> M - Mission (=8 for NIMBUS) NN - Mission number (=07 for NIMBUS-7) S - Sensor ID (=C for CZCS) YY - Year of tape creation DDD - Day of tape creation HH - Hour of tape creation MM - Minutes of tape creation	
14		61	76	A16	Logical Volume identification:<MNNS$YYDDDHHMM00> M - Mission (=8 for NIMBUS) NN - Mission number (=07 for NIMBUS-7) S - Sensor ID (=C for CZCS) YY - Year of center frame acquisition DDD - Day of center frame acquisition HH - Hour of center frame acquisition MM - Minutes of center frame acquisition	
15		77	92	A16	Volume Set ID	NIMBUS7CZCS$$$
16		93	94	I2	Number of Physical Volumes in the Set	$1
17		95	96	I2	Physical Volume Number, Start of Logical Volume	$1
18		97	98	I2	Physical Volume Number, End of Logical Volume	$1
19		99	100	I2	Physical Volume sequence number (i.e. of current tape)	$1
20		101	104	I4	First Referenced File Number in this Physical Volume	$$$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>	Blanks
24	121	128	A8	Logical Volume Creation Time <HHMMSSXX>	Blanks
25	129	140	A12	Logical Volume Generating Country	Blanks
26	141	148	A8	Logical Volume Generating Agency	Blanks
27	149	160	A12	Logical Volume Generating Facility	Blanks
28	161	164	I4	Number of Pointer Records in Volume Directory	Blanks
29	165	168	I4	Number of Records in Volume Directory	Blanks
30	169	172	I4	Number of Logical Volumes on this Physical Volume	Blanks
31	173	260	A88	Volume Descriptor Spare Segment	Blanks
32	261	360	A100	Local Use Segment	Blanks

4 ANNEXES

4.1 CEOS codes

The Commitee on Earth Observation Satellites(CEOS) has suggested the following codes for the different record types (they are all in decimal):

	CEOS file	CEOS record	CEOS mission	CEOS origin
VOLUME DESCRIPTOR	192	192	18	18
NULL VOLUME DESCRIPTOR	192	192	63	18
FILE POINTER	219	192	18	18
FILE DESCRIPTOR	63	192	18	18
TEXT RECORD	18	63	18	18

4.2 Record Fields Codes

These are the names used for the fields and group of fields in the CZCS LEVEL1 ESA format description.

REC_IDE_SEGM - Identifies the Record Identification Segment.

VOL_DOC_SEGM - Identifies the Volume Documentation Segment of the Volume Descriptor Record.

VOL_IDE_SEGM - Identifies the Volume Identification Segment of the Volume Descriptor Record.

FILE_IDE_SEGM - Identifies the File Identification Segment appearing in the File Pointer Record.

FDR_FIXED_SEGM - The File Descriptor Record Fixed Segment appear in each File Descriptor Record.

FDR_VARIA_SEGM - The same is for the File Descriptor Record Variable segment.

ILT_TYPA_SEGM - Identifies the ILT TYPE A data Segment of the CRTT Documentation Record.

OZON_HDR_SEGM - Identifies Ozonedata Header Information Segment of the Ozonedata Record.

OZONEDATA_SEGM - Identifies Ozonedata Segment of the Ozonedata Record.

STD_HDR - The Standard Header specified by NASA CRT tape specification.

QL_IMA_PAR - Identifies the Quicklook Image Parameter segment of the Quicklook File Descriptor Record.

QL_REC_PAR - Identifies the Quicklook Record Parameter Segment of the Quicklook File Descriptor Record.

QL_IMA_DESC - Identifies the Quicklook Image Description Segment of the Quicklook File Descriptor Record.

QL_IMA_PXL_DESC - Identifies the quicklook Image Pixel Description Segment of the Quicklook File Descriptor Record.

4.3 Pressure Level File Format

For CZCS Level-2 processing, the pressure level data corresponding to the CZCS observation date will be used.
This data are archived on Optical disk, but are not delivered to the users.
The following tables specify the Pressure Level File Format archived on Optical disk.

IMAGERY_VOLUME
PRESSURE_LEVEL_FILE
FILE_DESCRIPTOR_RECORD

field or field-group name		start byte	last byte	format	DESCRIPTION AND EXPLANATION	CONTENT
REC_IDE_SEGM	*	1	16		Record Identification Segment	
1		1	4	B4	Record Sequence Number	1
2		5		B1	File Code (according to CEOS definition)	63
3		6		B1	Record Code (according to CEOS definition)	192
4		7		B1	Mission Code (according to CEOS definition)	18
5		8		B1	Origin Code (according to CEOS definition)	18
6		9	12	B4	Length of this record	10000
7		13	14	A2	ASCII/EBCDIC Flag	A$
8		15	16	A2	2 Blanks	$$
FDR_FIXED_SEGM	*	17	180		FILE DESCRIPTOR RECORD FIXED SEGMENT	
9		17	28	A12	Control Document Number for this Data File Format	NICZ-001-001
10		29	30	A2	Control Document Revision Number <XX>,where XX='$A', etc.	$A
11		31	32	A2	File Design Descriptor Revision Letter <XX>, (Initially '$A',then '$B',etc.)	$A
12		33	44	A12	Software Release Number NICZ-001-XXX, initially XXX=001,then 02,etc.	NICZ-001-001
13		45	48	I4	File Number	$$$4
14		49	64	A16	File Name	NI7$CZCSPRESLEV
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 -n/a	
19		85	92	I8	Record Code Location -n/a	
20		93	96	I4	Record Code Field Length -n/a	
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	Flag indicating that data interpretation information is included within the file descriptor record. <X> ,where X=Y OR N ,for YES or NO	Y
25		114		A1	Flag indicating that data interpretation information is included within the file in record(s) other than the descriptor <X> ,where X=Y OR N ,for YES or NO	N
26		115		A1	Flag indicating that data display information is included within the file descriptor record. <X> ,where X=Y OR N ,for YES or NO	N
27		116		A1	Flag indicating that data display information is included within the file in record(s) other than the file descriptor. <X> ,where X=Y OR N ,for YES or NO	N

28		117	180		Reserved Segment	Blanks
FDR_VARIA_SEGM	*	181	10000		FILE DESCRIPTOR RECORD VARIABLE SEGMENT	
29		181	186	I6	Number of Pressure Level Records	$$$$$1
30		187	192	I6	Pressure Level Record Length	$10000
31		193	10000		Blanks	Blanks

IMAGERY_VOLUME
PRESSURE_LEVEL_FILE
PRESSURE_LEVEL_RECORD

field or field-group name		start byte	last byte	format	DESCRIPTION AND EXPLANATION	CONTENT
REC_IDE_SEGM	*	1	16		Record Identification Segment	
1		1	4	B4	Record Sequence Number	2
2		5	8	A4	Blanks	Blanks
3		9	12	B4	Length of this record	10000
4		13	14	A2	ASCII/EBCDIC flag	A$
5		15	16	A2	2 blanks	$$
PRES_HDR_SEGM	*	17	54		Header Information Segment	
6		17	20	B4	Initial longitude point (in degrees W .001)	
7		21	24	B4	Initial latitude point (in degrees N .001)	
8		25	28	B4	Longitude mesh width (in degrees .001)	
9		29	32	B4	Latitude mesh width (in degrees .001)	
10		33	36	B4	Number of lines	
11		37	40	B4	Number of columns	
12		41	44	B4	Pressure level in hPa	
13		45	48	B4	Year	
14		49	52	B4	Day of year	
PRESDATA_SEGM		53	10000		Pressure Level Data Segment	
15		53	2N+52	N*B2	Level hight (in meters) N = (number of lines)*(number of columns)	
16		2N+53	10000		Spares	Blanks