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DECISION No. 12/05 STANDARDIZATION OF LOGICAL FORMATS FOR THE EXCHANGE OF DIGITAL DATA AMONG STATES PARTIES

The Open Skies Consultative Commission, pursuant to the provisions of Article IX, Section I, paragraph 1 of the Treaty on Open Skies, has decided as follows:

This decision standardizes the logical data format for exchange of digital data recorded during observation flights and for analogue recorded data converted to digital following observation flights. The format specified in this decision conforms to the Basic Image Interchange Format (BIIF) standard (International Organization for Standardization (ISO) 12087-5:1998 (E)).

SECTION I. DEFINITION OF TERMS

The following definitions shall apply to terms used in this Decision.

The term “direct access medium”, or “random access medium”, means a storage medium in which data locations are found by going directly to their physical locations on the medium. In this decision, a direct access medium will be referred to as a “disk”, for brevity.

The term “physical format” means, an agreed combination of a file system and a peripheral bus.

The term “logical format” means the arrangement convention for data and data bits on a digital recording medium. “Logical format” is synonymous with the term “digital data format”.

SECTION II. REQUIRED ANNOTATION

Annex B, Section II of the Treaty on Open Skies defines the required annotation parameters and intervals. Decision Number Eight to the Treaty specifies the intervals at which the data shall be annotated. The logical format structure that is described in this decision has been written to allow for recording of the Treaty required annotation at the

required intervals. The details of the Treaty required annotation and how they are addressed in this logical format structure is described in the next section.

SECTION III. EXCHANGE MEDIUM AND FORMAT DESCRIPTIONS

1. EXCHANGE MEDIUM DESCRIPTION

In the case of digital data exchanged on direct access media (“disks”):

An Open Skies digital data exchange disk is composed of a BIIF-compliant MEDIA ANNOTATION FILE, a series of BIIF-compliant image files, and a BIIF-compliant MEDIA DIRECTORY FILE. For video cameras using a frame-imaging device (including analogue frame imaging devices whose output has been converted to digital format in accordance with Section II, paragraph 2 (A) of Decision Number Seventeen) and for processed sideways-looking synthetic aperture radar (SAR) images, each image file shall contain the data for one image (i.e., frame). For video cameras using a line-imaging device, infra-red line-scanning devices, and SAR initial phase information, each image file shall contain the data for no more than 512 lines, in accordance with paragraph 4 of Decision Number Eight to the Treaty on Open Skies.

2. BIIF IMAGE FILE FORMAT DESCRIPTION

The following paragraphs describe in general terms the structure of a BIIF compliant image file. Refer to ISO 12087-5:1998(E) Basic Image Interchange Format (BIIF), dated 1 December 1998 for detailed specifications.

- (A) Each image file contains a file header, an image data segment, and a text data segment. The file header stores information about the identification, structure, content, size of the file as a whole, and the overall sizes of the image and text data segments within the file. Each image and text data segment consists of a subheader containing information that describes characteristics of the data and a data field that contains the data itself. The Data Extension Segments may be used to provide kinds of data and data characteristics not explicitly defined in this format but required for proper processing or interpretation of the sensor data (Figure 1).

FILE HEADER	IMAGE DATA SEGMENT		TEXT DATA SEGMENT		DATA EXTENSION SEGMENTS
	IMAGE SUBHEADER	IMAGE DATA	TEXT SUBHEADER	TEXT DATA	

Figure 1. Open Skies Digital Data Exchange BIIF (ISO 12087-5)-Compliant Image File Structure

- (B) The file header and each subheader are composed of a number of data fields. The meaning of each data field is inferred from its position in the file and, in some cases, by the particular values stored in one or more preceding fields. For example, the BIIF standard specifies that the first data element in the file

header is the four character "Profile Name". Therefore, the first 4 bytes of any Open Skies digital data exchange file contain the ASCII string *OSDE*. The remainder of the header or subheader is then parsed by reading the value in the next data field, interpreting it according to the ISO 12087-5:1998(E) format standard and, if appropriate, using it to determine the nature of subsequent data fields. Character data elements are followed by the appropriate number of spaces to fill the field size. Numeric data elements are stored as character strings, preceded by appropriate number of "0" characters to fill the field size;

- (C) Image data is stored immediately following the image subheader. The data may be organized by blocks and/or by bands. A block is a rectangular array of pixel values which is a subimage of the full image. An image consists of the union of one or more non-overlapping blocks. Bands are homogeneous data types, such as the red channel in an RGB image. Within a block or band, data is organized in row-major order (i.e., first pixel of the first row, followed by the second pixel of the first row, and so on) starting with the upper leftmost pixel in the block or band. For SAR initial phase information, a line of initial phase information is treated as a row in an image;
- (D) The BIIF format allows for ancillary information to be included in the image data file. This is implemented through the use of Tagged Record Extensions (TREs), a means to provide additional attributes about standard data segments not contained in the standard header or subheader fields. If a user tagged record extension is too long to fit in the header or subheader, then it is placed in a Data Extension Segment (DES). This may be necessary for sensors that require ancillary information in order to process the sensor data. For example, quickly changing flight data and data necessary for the processing of SAR initial phase information may be placed together with the phase information lines, or in a DES;
- (E) Treaty-required annotation text specified in Appendix 1 to Annex B of the Treaty is stored immediately following the text subheader. The content and format of the text data is specified in Annex E of this Decision.

SECTION IV. OPEN SKIES DIGITAL DATA EXCHANGE FORMAT (OSDDEF) FILE CONTENT

1. The contents of an Open Skies Digital Data Exchange Format (OSDDEF) file are described in detail in Annexes A-F of this Decision.

- (A) The first column in each table identifies the name of the data field;
- (B) The second column specifies the allowable data field value or range of values. Italicized entries in this column indicate the actual character string value that shall be used in the Open Skies format for that data element. In those cases where the actual value of the data field varies depending on the nature of the data stored in that element, a range of allowable values is indicated in the table instead;

- (C) The third column in the tables specifies the size of the data field value in bytes (text data values are left justified, padded with spaces (if necessary) and numeric data values are right justified and left padded with zeros (if necessary));
- (D) A brief description of the data element is provided in the fourth column;
- (E) The last column of each table indicates whether a field is required (R) to be in the file or is conditional (C) based on the particular value of another data element. For example, if there is only one band in the image in a particular file, then the value of *NBANDS* in the image subheader is set to 1 and the elements labeled *IREPBAND2*, *ISUBCAT2*, etc. (which are conditional based on there being more than one band in the image) are not included in that file.

2. The ISO 12087-5:1998(E) BIIF standard provides a detailed description of each data field. An OSDDEF data element must be compliant with, but may be more restrictive than, the corresponding BIIF data element. Additional detailed descriptions of data fields that contain variable data are provided following each Annex table, where useful.

3. For each user-defined value included in an Open Skies Digital Data Exchange Format file field, the State Party providing that value shall provide the information required to fully and unambiguously interpret it, as part of the sensor information made available at the time of certification. User-defined fields should use field names and units used in the Open Skies Notification Formats and other Treaty documents when such field names and units exist. In the event that additions or changes not requiring recertification of the sensor are made to user-defined values after certification has been completed, notification of such changes shall be provided to the Open Skies Consultative Commission.

SECTION V. TAGGED RECORDS

1. Additional information may be required for the proper processing or interpretation of digital sensor data. Since the specific data items and their characteristics may vary widely from sensor to sensor, any such required information shall be provided as Tagged Record Extensions, and shall be included in the User-defined Header Data Field (*UDHD*) of the Open Skies Digital Data Exchange File Header, in the User-defined Image Data Field (*UDID*) of the Image Subheader, in the Extended Subheader data fields *IXSHD*, *TXSHD*, or in the Data Extension Segment (DES) in the case where sufficient space is not available in the *UDHD*, *UDID*, *IXSHD* or *TXSHD*.

2. While the *TRETAG*, *TREL* and *TREDATA* fields are included in the Open Skies Digital Data Exchange Format to specify the name and length of a tagged record, additional information must be provided, outside of the Open Skies Digital Data Exchange Format, by the developer of the tagged record. For each tagged record included in an Open Skies Digital Data Exchange Format file, the developer of the tagged record shall provide the information required to fully and unambiguously interpret it, as part of the sensor information made available at the time of certification. In the event that additions or changes not requiring recertification of the sensor are made to user-defined values after certification has been completed, notification of such changes shall be provided to the Open Skies Consultative Commission.

SECTION VI. EXCHANGE MEDIUM CONTENTS

1. (A) In order to fulfil the requirements of Annex B, Section II, paragraph 1, of the Treaty on Open Skies, each Open Skies digital data exchange medium (“disk”) shall contain a MEDIA ANNOTATION FILE, the structure and contents of which are specified in Paragraph 2 of this section. The OSDDEF MEDIA ANNOTATION FILE, which shall be named MEDIA_ANNOTATION.BIF, shall contain no images and one text segment;
- (B) In order to assist in accessing individual images on the exchange medium, the exchange disk shall contain an OSDDEF MEDIA DIRECTORY FILE, named MEDIA DIRECTORY.BIF, containing no images and one or more text segments. The sensor configuration, the time of collection, the aircraft location and the name of the OSDDEF image file shall be included in the MEDIA DIRECTORY FILE for each OSDDEF image file on the exchange medium. The structure and contents of MEDIA DIRECTORY FILE are specified in paragraph 3 of this section;
- (C) In the event that Tagged Record Extensions (TREs) are present in any OSDDEF image file on the exchange medium, the exchange medium shall contain one or more Interface Control Document (ICD) text files specifying clearly and in detail the information necessary to completely and unambiguously extract the data, and which will allow the data to be fully processed in an expeditious manner. There shall be an ICD text file for each sensor configuration for which there are OSDDEF image files containing TREs on the exchange medium. ICD files shall be named *config_ICD.TXT*, where for a specific sensor configuration *config* shall be replaced by the 12 character name of the sensor configuration as certified in the State Party’s Format 25, and reported in the Notification Formats field SENSREFNUM. (For example, RF-SAR_-0001_ICD.TXT).

2. MEDIA ANNOTATION FILE

The text segment of a MEDIA ANNOTATION FILE shall consist of the following lines of text, each terminated with a carriage return and line feed:

- (A) Observation Flight reference number as defined in Treaty Annex B, Appendix 1, paragraph 1. (6 characters, OSYNNN, where Y is the last digit of the calendar year of the flight, and NNN is a unique three digit number that identifies the flight);
- (B) Date of Observation Flight in Co-ordinated Universal Time to the nearest day. (8 characters, CCYYMMDD where CCYY is the four digit year, MM is month, and DD is day);

Repeated for each sensor configuration with imagery on the medium:

- (C) Sensor Description as defined in Treaty Annex B, Appendix 1, paragraph 2. (6 characters);

- (D) Sensor Configuration, as described in Treaty Annex B, Appendix 1, paragraph 3. (10 characters — as reported in the Notification Formats field SENSINSTAL);
- (E) Focal Length in millimetres, if applicable; spaces if not applicable. (3 characters).

Annex G, paragraph (A) provides a sample MEDIA ANNOTATION FILE.

MEDIA DIRECTORY FILE

The first text segment of a MEDIA DIRECTORY FILE shall contain one line of text indicating the number of Open Skies Digital Data Exchange Format image files on the exchange medium (8 characters + Carriage Return + Line Feed), followed by one line of text for each OSDDEF image file on the medium. Each line shall consist of a continuous ASCII string formatted as follows:

- (A) Image Date and Time in Co-ordinated Universal Time to the nearest minute. (12 characters, CCYYMMDDhhmm, where CCYY is the four digit year, MM is month, DD is day, hh is hour and mm is minute);
- (B) Sensor Description as defined in Treaty Annex B, Appendix 1, paragraph 2. (6 characters);
- (C) Sensor Configuration Number. (12 characters — as reported in the Notification Formats field SENSREFNUM);
- (D) Focal Length in millimetres, if applicable; spaces if not applicable. (3 characters);
- (E) Aircraft Location in decimal degrees to the nearest 1/100 of a degree (dd.dd(N or S) ddd.dd(E or W)) or degrees-minutes with accuracy to the minute (dd mm(N or S) ddd mm(E or W)). (14 characters);
- (F) The following is a recommended structure for naming OSDDEF image files on a direct access exchange medium. The filename is a continuous ASCII string, from 36 to 48 characters in length, (followed by sufficiently many spaces to fill 48 characters) composed of:
 - (1) The Open Skies flight reference number (6 characters, OSYNNN, where Y is the last digit of the calendar year of the flight, and NNN is a unique three digit number that identifies the flight, derived from the OS NOFES Data Dictionary entry OBSFLTNUM);
 - (2) The sensor reference number of the sensor acquiring the image (12 characters CC-RRRR-SSSS, as defined in OS NOFES Data Dictionary entry SENSREFNUM, and reported in Formats 3, 4, 5, 6, 8 and 25);

- (3) The date and time the image was acquired (12 characters CCYYMMDDhhmm, Image Date and Time in Co-ordinated Universal Time to the nearest minute);
- (4) The image sequence number, (2 to 14 characters, beginning with an underscore character, _NNNNNNNNN), representing:
 - (a) In the case of line imaging devices, for each sensor reference number, the sequential file number of the image created in accordance with paragraph 4 of Decision Number Eight of this Treaty, based on temporal ordering of collection time, starting from the beginning of the mission;
 - (b) In the case of frame imaging devices, for each sensor reference number, the frame number of the image, starting from the beginning of the mission;
- (5) In the case of sideways-looking synthetic aperture radar, an indicator of whether the file contains initial phase information or radar image data (2 characters, *IQ* to indicate that the file contains initial phase information, or *IM* to indicate that the file contains radar image data);
- (6) The BIIF file extension, which identifies the file as a BIIF compliant image file (4 characters, *.BIF*).

For example (where ^ indicates the presence of a space):
 OS3567US-OF__-3007200310231449_11.BIF^^^^^^^^^^
 OS4502RF-SAR_-0001200405110712_236IM.BIF^^^^^^^^^^
 OS4502RF-SAR_-0001200405110712_16396IQ.BIF^^^^^^

Additional text segments shall be added as necessary to contain an entry for each OSDDEF image file on the exchange medium.

Annex G, paragraph (B) provides a sample MEDIA DIRECTORY FILE for data exchanged on a random access exchange medium.

SECTION VII. EXAMPLE DATA

- 1. Annex G provides examples of the structure and contents of Open Skies Digital Data Exchange Format MEDIA ANNOTATION and MEDIA DIRECTORY files.
- 2. Annex H provides examples of File Headers and Image Data Subheaders for various sensors and an example of a Tagged Record Extension for SAR initial phase information parameters.

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This Decision shall enter into force immediately. It shall remain in force until 31 December 2010. The State Parties shall, within the Open Skies Consultative Commission

and during the period this Decision is in force, conclude a follow-on agreement on the standardization of logical formats for the exchange of digital data among States Parties, which shall enter into force upon the expiration of this Decision.

Decided in Vienna, in the Open Skies Consultative Commission, on 12 December 2005, in each of the six languages specified in Article XIX of the Treaty on Open Skies, all texts being equally authentic.

OPEN SKIES DIGITAL DATA EXCHANGE FILE HEADER

Field	Value	Size	Description	Type
<i>FHDR</i>	<i>OSDE</i>	4	Profile Name	R
<i>FVER</i>	<i>01.00</i>	5	Version	R
<i>CLEVEL</i>	<i>00</i>	2	Profile Complexity Level	R
<i>STYPE</i>	<i>BF01</i>	4	Standard Type	R
<i>OSTAID</i>	<i>OPEN SKIES</i>	10	Originating Source	R
<i>FDT</i>	<i>CCYYMMDDhhmm00</i>	14	Date & Time in Co-ordinated Universal Time	R
<i>FTITLE</i>	<i>OPEN SKIES DIGITAL DATA EXCHANGE MEDIA ANNOTATION or OPEN SKIES DIGITAL DATA EXCHANGE MEDIA DIRECTORY or OPEN SKIES DIGITAL DATA EXCHANGE IMAGE DATA</i> (followed by spaces to fill 80 characters)	80	Title	R
<i>FSEC</i>	<i>FOR OPEN SKIES PURPOSES ONLY</i> (139 spaces follow)	167	Security Profile Specific Parameters	R
<i>FSCOP</i>	<i>00000</i>	5	File Copy Number	R
<i>FSCPYS</i>	<i>00000</i>	5	File Total Number of Copies	R
<i>ENCRYP</i>	<i>0</i>	1	Encryption (0 = Not Encrypted)	R
<i>OID</i>	State Party Name followed by spaces to fill 45 characters	45	Originator's Identification	R
<i>FL</i>	<i>000000000388 - 999999999999</i>	12	Length of File, including all headers, subheaders and data, in bytes	R
<i>HL</i>	<i>000388 - 999999</i>	6	<i>OSDE</i> Header Length, in bytes	R
<i>NUMI</i>	<i>000</i> or <i>001</i>	3	Number of Images in the File. <i>000</i> for MEDIA ANNOTATION or MEDIA DIRECTORY FILE, <i>001</i> for Image File	R
<i>LISH001</i>	<i>000439 - 999999</i>	6	Length of Image Subheader	C

Field	Value	Size	Description	Type
<i>LI001</i>	0000000001-9999999999	10	Length of Image Data in Bytes	C
<i>NUMS</i>	000	3	Number of Symbols	R
<i>NUMX</i>	000	3	Reserved for future data types	R
<i>NUMT</i>	000 - 999	3	Number of Text Segments	R
<i>LTSH001</i>	0282 - 9999	4	Length of 1st Text Subheader	C
<i>LT001</i>	00001 - 99999	5	Length of 1st Text Data	C
...				C
<i>LTShn</i>	0282 - 9999	4	Length of Nth Text Subheader	C
<i>LTn</i>	00001 - 99999	5	Length of Nth Text Data	C
<i>NUMDES</i>	000 - 999	3	Number of Data Extension Segments	R
<i>LDSH001</i>	0200 - 9999	4	Length of 1st Data Extension Segment Subheader	C
<i>LD001</i>	000000001 - 999999999	9	Length of 1st Data Extension Segment Data Field	C
...				C
<i>LDSHn</i>	0200 - 9999	4	Length of Nth Data Extension Segment Subheader	C
<i>LDn</i>	000000001 - 999999999	9	Length of Nth Data Extension Segment Data Field	C
<i>NUMRES</i>	000	3	Number of Reserved Extension Segments	R
<i>UDHDL</i>	00000 - 99999	5	User-defined Header Data Length	R
<i>UDHOFL</i>	000 - 999	3	User-defined Header Overflow	C
<i>UDHD</i>	User-defined	<i>UDHDL-3</i>	User-defined Header Data	C
<i>XHDL</i>	00000	5	Extended Header Data Length	R

IMAGE DATA SUBHEADER

Field	Value	Size	Description	Type
<i>IM</i>	<i>IM</i>	2	Image Data Subheader Identification	R
<i>IID</i>	Frame Number or Line Counter	10	Image Identification	R
<i>IDATIM</i>	CCYYMMDDhhmm00	14	Date & Time of image in Co-ordinated Universal Time	R
<i>IINFO</i>	User-defined Image Information (followed by spaces to fill 97 characters)	97	Image Information	R
<i>ISCSEC</i>	<i>FOR OPEN SKIES PURPOSES ONLY</i> (139 spaces follow)	167	Image Security Classification	R
<i>ENCRYP</i>	0	1	Encryption (0 = Not Encrypted)	R
<i>ISORCE</i>	(Sensor Configuration Number as provided in Notification Formats (CC-RRRR-SSSS) followed by 30 spaces)	42	Image Source	R
<i>NROWS</i>	00000001-99999999	8	Number of Rows in Image	R
<i>NCOLS</i>	00000001-99999999	8	Number of Columns in Image	R
<i>PVTYPE</i>	<i>INT, SI, R or C</i>	3	Pixel Value Type: <i>INT</i> is unsigned integer, <i>SI</i> is signed integer, <i>R</i> is real (decimal) numbers with 32 bit floating point representation and <i>C</i> is complex numbers with 64 bit floating point representation. (Bits per pixel are shown in field <i>ABPP</i>)	R
<i>IREP</i>	<i>MONO</i> or <i>RGB</i> or <i>RGB/LUT</i> or <i>MULTI</i> (followed by spaces to fill 8 characters)	8	Image Representation	R
<i>ICAT</i>	<i>VIS</i> or <i>IR</i> or <i>MS</i> or <i>SAR</i> or <i>SARIQ</i> (followed by spaces to fill 8 characters)	8	Image Category	R

Field	Value	Size	Description	Type
<i>ABPP</i>	01-96	2	Actual Bits-per-Pixel per Band	R
<i>PJUST</i>	<i>R</i> or <i>L</i>	1	Pixel Justification (<i>R</i> = Right Justified <i>L</i> = Left Justified)	R
<i>ICORDS</i>	space or user-defined	1	Image Co-ordinate System (space = None)	R
<i>IGEOLO</i>	co-ordinates	60	Image Location (Not present if <i>ICORDS</i> = space)	C
<i>NICOM</i>	0	1	Number of Image Comments	R
<i>IC</i>	<i>NC</i>	2	Image Compression (<i>NC</i> = No Compression)	R
<i>NBANDS</i>	1 or 3 or as permitted by Decision 14 or 15	1	Number of Bands comprising the image	R
<i>IREPBAND1</i>	Spaces for <i>IREP</i> = <i>MONO</i> or <i>RGB/LUT</i> , <i>R</i> (red) for <i>IREP=RGB</i> or <i>MULTI</i>	2	1st band representation. Spaces or <i>R</i> , user-defined when <i>NBANDS</i> > 3	R
<i>ISUBCAT1</i>	Centre Wavelength	6	Centre Wavelength of 1 st Band (micrometres for visible and infrared imagery; centimetres for SAR)	R
<i>IFC1</i>	<i>N</i> or user-defined	1	User-defined Band 1 Image Filter Condition. Default is <i>N</i> (None)	R
<i>IMFLT1</i>	User-defined or spaces	3	User-defined Band 1 Standard Image Filter Code. Default is Spaces	R
<i>NLUTS1</i>	0-4	1	Number of Band 1 Look-up Tables (LUTs)	R
<i>NELUT1</i>	00001-65536	5	Present only if <i>NLUTS1</i> > 0; number of entries in each Band 1 LUT, when present	C
<i>LUTD11</i>	Look Up Table (LUT) values for 1st LUT of Band 1	<i>NELUT1</i>	Present only if <i>NLUTS1</i> > 0; LUT entries for 1st LUT of Band 1; This field supports only integer band data (<i>PVTYPE</i> = <i>INT</i>)	C
....				C
<i>LUTD1m</i>	LUT values for mth LUT of Band 1	<i>NELUT1</i>		C
....				C

Field	Value	Size	Description	Type
<i>IREPBAND_n</i>	When <i>IREP=MONO</i> or <i>RGB/LUT</i> , <i>IREPBAND2</i> and <i>IREPBAND3</i> = spaces. When <i>IREP = RGB</i> or <i>MULTI</i> , <i>IREPBAND2=G</i> (green) and <i>IREPBAND3=B</i> (blue) When <i>IREP = MULTI</i> , <i>IREPBAND2=IR</i> (near IR band of 4 band video cameras)	2	This field shall contain a valid indicator of the interpretation of the n th band correlated with the value of <i>IREP</i>	C
<i>ISUBCAT_n</i>	Centre Wavelength	6	Centre Wavelength of nth Band (micrometres for visible and infrared imagery; centimetres for SAR)	C
<i>IFC_n</i>	<i>N</i> or user-defined	1	User-defined Band n Image Filter Condition. Default is <i>N</i> (None)	C
<i>IMFLT_n</i>	User-defined or spaces	3	User-defined Band n Standard Image Filter Code. Default is Spaces	C
<i>NLUTS_n</i>	0-4	1	Number of Band n LUTs	C
<i>NELUT_n</i>	00001-65536	5	Present only if <i>NLUTS_n > 0</i> ; number of entries in each Band n LUT, when present	C
<i>LUTD_{n1}</i>	Look Up Table (LUT) values for 1st LUT of Band n	<i>NELUT_n</i>	Present only if <i>NLUTS_n > 0</i> ; LUT entries for 1st LUT of Band n; This field supports only integer band data (<i>PVTYPE = INT</i>)	C
....				C
<i>LUTD_{nm}</i>	LUT values for mth LUT of Band n	<i>NELUT_n</i>		C
<i>ISYNC</i>	0-9	1	0 to indicate no synchronization codes in image data; other values user-defined	R

Field	Value	Size	Description	Type
<i>IMODE</i>	<i>B, P or S</i>	1	<i>IMODE = B</i> (band interleaved) for all single band images; = <i>P</i> (pixel interleaved) for files in which the R, G and B values for a pixel are stored contiguously ; = <i>S</i> (band sequential) for files in which the B image follows the G image follows R the image within a block.	R
<i>NBPR</i>	0001-9999	4	Number of blocks per row	R
<i>NBPC</i>	0001-9999	4	Number of blocks per column	R
<i>NPPBH</i>	0001-9999	4	Number of pixels per block horizontal. Any combination of <i>NBPR</i> and <i>NPPBH</i> such that $NBPR * NPPBH \geq NCOLS$ is acceptable	R
<i>NPPBV</i>	0001-9999	4	Number of pixels per block vertical. Any combination of <i>NBPC</i> and <i>NPPBV</i> such that $NBPC * NPPBV \geq NROWS$ is acceptable	R
<i>NBPP</i>	01-96	2	Number of storage bits per pixel per band $NBPP \geq ABPP$	R
<i>IDLVL</i>	001	3	Display Level	R
<i>IALVL</i>	000	3	Attachment Level	R
<i>ILOC</i>	0000000000	10	Image Location	R
<i>IMAG</i>	1.00	4	Image Magnification	R
<i>UDIDL</i>	00000 or 00003- 99999	5	User-defined Image Data Length (Length in bytes of the entire field <i>UDID</i> plus three bytes)	R
<i>UDOFL</i>	000 – 999	3	User-defined Overflow	C
<i>UDID</i>	(See Annex C for SAR Information Parameters)	<i>UDIDL-3</i>	SAR Information Parameters and a Description of Ancillary Data for SAR or Other Sensors	C (<i>UDIDL</i> > 0)
<i>IXSHDL</i>	00000 or 00003-99999	5	Extended Subheader Data Length (Length of <i>IXSHD</i> plus 3)	R
<i>IXSOFL</i>	000 – 999	3	Extended Subheader Overflow	C
<i>IXSHD</i>	User-defined	<i>IXSHDL-3</i>	Extended Subheader Data	C

TABLE C1 TAGGED RECORD EXTENSION FOR SAR INFORMATION PARAMETERS

FIELD	VALUE	SIZE	DESCRIPTION	TYPE
<i>TRETAG</i>	CcSARn	6	Unique extension type identifier for SAR information parameters, where cc is two letter country code and n is user assigned format number	R
<i>TREL</i>	00076-99985	5	Total Length of SAR information parameter description fields	R
<i>TREDATA</i>	SAR Information Parameters Table C2	*	User-defined for SAR data	R

* User-defined field size

TABLE C2 *TREDATA* — SAR INFORMATION PARAMETERS

FIELD	VALUE	SIZE	DESCRIPTION	TYPE
<i>SARTYP</i>	<i>LINEAR FM CHIRP</i> (5 spaces follow)	20	SAR Type	R
<i>SARRT</i>	<i>R</i> or <i>T</i>	1	<i>SARSLANTMN</i> Units, <i>R</i> = Range to first sample, <i>T</i> = Time to first sample	R
<i>SARSLANTMN</i>	000.0-999.9	5	Range/Time to First Sample	R
<i>SARFW</i>	<i>F</i> or <i>W</i>	1	<i>SAROPFREQ</i> Units, <i>F</i> = Frequency, <i>W</i> = Wavelength	R
<i>SAROPFREQ</i>	00000.00-99999.99	8	Emitted Pulse Carrier Frequency or Wavelength	R
<i>SARBANDTX</i>	000.00-999.99	6	Emitted Pulse Bandwidth	R
<i>SARDUR</i>	00.0000-99.9999	7	Emitted Pulse Duration	R

FIELD	VALUE	SIZE	DESCRIPTION	TYPE
<i>SARNP</i>	<i>N</i> or <i>P</i>	1	<i>SARPULSES</i> Units <i>N</i> = number of pulses emitted in pulses per metre of flight path, <i>P</i> = Pulse Repetition Frequency in Hz	R
<i>SARPULSES</i>	0000.000-9999.999	8	Emitted Number of Pulses	R
<i>SARVEL</i>	000.0000-999.9999	8	Along-track Platform Velocity	R
<i>SARAAB</i>	0.0000-9.9999	6	Azimuth Antenna Beamwidth	R
<i>SARRANUM</i>	00000-99999	5	Number of Range Samples	R
...	(SAR-specific Data) User-defined	*	SAR-specific Data (User-defined in accordance with accompanying interface control document (ICD))	C (<i>TREL</i> >76)

* User-defined field size

TRETAG

This field contains a unique extension type identifier for SAR information parameters, here cc is two letter country code and n is user assigned format number to allow for additional formats in the future.

TREL

This field contains the length in bytes of the data contained in *TREDATA*.

TREDATA

This field contains user-defined data.

SARTYP

This field indicates the type of SAR that collected the data in this file. At the present time, the only valid value is *LINEAR FM CHIRP* which indicates a straight-line flying SAR using a linear FM chirp emitted pulse.

SARRT

This field indicates whether the range to first sample or the time to first sample is stored in the *SARSLANTMN* field. If this field contains *R*, then *SARSLANTMN* contains the range to first sample. Otherwise, this field contains *T* and *SARSLANTMN* contains the time to first sample.

SARSLANTMN

If ($SARRT = R$), then this field contains the range to first sample in metres. Otherwise, this field contains the time to first sample in microseconds.

SARFW

This field indicates whether SAR operating frequency or SAR operating wavelength is contained in the *SAROPFREQ* field. If this field contains *F*, the *SAROPFREQ* contains the SAR operating frequency. Otherwise, this field contains *W* and *SAROPFREQ* contains the SAR operating wavelength.

SAROPFREQ

If ($SARFW = F$), then this field contains the emitted pulse carrier frequency in MHz to the nearest one-tenth Megahertz. Otherwise, this field contains the emitted pulse wavelength in centimetres.

SARBANDTX

This field contains the emitted pulse bandwidth in MHz.

SARDUR

This field contains the emitted pulse duration in microseconds.

SARNP

This field indicates whether number of pulses or pulse repetition frequency is stored in the *SARPULSES* field. If this field contains *N*, then *SARPULSES* contains the number of pulses emitted in pulses per metre of flight path. Otherwise, this field contains *P*, and *SARPULSES* contains the pulse repetition frequency.

SARPULSES

If ($SARNP = P$), then this field contains the number of pulses emitted in pulses per metre of flight path. Otherwise, this field contains the emitted pulse repetition frequency in Hz.

SARVEL

This field contains the along-track platform velocity in metres per second.

SARAAB

This field contains the azimuthal antenna beamwidth in radians.

SARRANNUM

This field contains the number of range samples generated by the radar per metre of slant range.

TEXT DATA SUBHEADER

FIELD	VALUE	SIZE	DESCRIPTION	TYPE
<i>TE</i>	<i>TE</i>	2	Text Subheader Identifier	R
<i>TEXTID</i>	<i>ANNOTATION</i> or <i>OSDDEF DIR</i> or <i>MEDIA HDR</i>	10	Text Identification	R
<i>TXTDT</i>	CCYYMMDDhhmm00	14	Date & Time of image in Co-ordinated Universal Time	R
<i>TXTITL</i>	<i>OPEN SKIES MEDIA ANNOTATION</i> or <i>OPEN SKIES MEDIA DIRECTORY</i> or <i>OPEN SKIES IMAGE ANNOTATION</i> (followed by spaces to fill 80 characters)	80	Text Title	R
<i>TSSEC</i>	<i>FOR OPEN SKIES PURPOSES ONLY</i> (139 spaces follow)	167	Text Security Classification	R
<i>ENCRYP</i>	0	1	Encryption (0 = not encrypted)	R
<i>TXTFMT</i>	user-defined	3	Identifier for Text Format for Annotation Entries, default is <i>STA</i> for ASCII	R
<i>TXSHDL</i>	00000-09717	5	Extended Text Subheader Data Length	R
<i>TXSHD</i>	Used Defined	<i>TXSHDL</i>	Extended Subheader Data	C

TE

This field shall have the value *TE* to identify the subheader as a text subheader.

TEXTID

This field contains the text identification. The value shall be *ANNOTATION* for Open Skies Digital Data Exchange Format image files, *OSDDEF DIR* for Open Skies Digital Data Exchange Format Tape Directory files, or *MEDIA HDR* for Open Skies Digital Data Exchange Media Annotation files.

TXTDT

This field contains the date and time of day representations of file creation in the format CCYYMMDDhhmm00, where CCYY is the four digit year, MM is the month (01-12), DD is the day of the month (01-31), hh is the hour (00-23), mm is the minute (00-59), and 00 in place of seconds to express the time of day in Co-ordinated Universal Time (UTC).

TXTTTL

This field contains the title of the text item.

TSSEC

This field contains the profile specific information for the text product security and is defined in the profile.

ENCRYP

This field contains the encryption code as required by the BIIF format. The value shall be 0 (not encrypted).

TXTFMT

This field contains a three character code that can be used to indicate the user-defined format or template to be used to display the text. The template and its three character code shall be provided as part of the sensor information made available at the time of certification. In the event that additions or changes not requiring recertification of the sensor are made to a user-defined text format after certification has been completed, notification of such changes shall be provided to the Open Skies Consultative Commission. The default value for *TXTFMT* is *STA*, indicating that the text values that follow are in ASCII format.

TXSHDL

This field contains the length in bytes of the *TXSHD*. A value of zero shall mean that no profile defined tagged record extensions are included in the text subheader. If a profile defined tagged record extension is too long to fit in the *TXSHD* field, it shall be put in a data extension segment (DES).

TXSHD

This field contains the user-defined tagged record extensions. The value of the first three bytes of this field shall be 000 if this field does not overflow into a DES, or it shall contain the sequence number of the DES into which it does overflow.

TREATY ON OPEN SKIES ANNOTATION TEXT FORMAT

FIELD	VALUE	SIZE	DESCRIPTION	TYPE
<i>OSFLT</i>	<i>OSXXXX</i>	6	Observation Flight Reference Number	R
<i>OSDAT</i>	<i>CCYYMMDD</i>	8	Observation Flight Date	R
<i>OSSNSR</i>	<i>XXXXYY</i>	6	Sensor Description	R
<i>SENSINSTA L</i>	<i>AAA-B-C-DD</i>	10	Sensor Installation	R
<i>OSFCLL</i>	<i>000-999</i>	3	Focal Length in millimetres	R
<i>OSDTG</i>	<i>CCYYMMDDh hmm</i>	12	Image Date & Time	R
<i>OSHAGL</i>	<i>XXXXXY</i>	6	Height Above Ground Level	R
<i>OSLOC</i>	<i>dd.dd(N or S) ddd.dd(E or W) or dd mm(N or S) ddd mm(E or W)</i>	14	Aircraft Location	R
<i>OSHDG</i>	<i>000-359</i>	3	Aircraft True Heading	R
<i>OSSCAN</i>	<i>000-359</i>	3	Scan Angle; <i>000</i> for <i>OSSNSR = SAR...</i>	R
<i>OSLDA</i>	<i>00-90</i>	2	Look Down Angle to the nearest point of the swath width for <i>OSSNSR = SAR...</i> ; <i>00</i> otherwise	R
<i>OSNEAR</i>	<i>00-99</i>	2	The nearest point of the swath width in kilometres for <i>OSSNSR = SAR...</i> ; <i>00</i> otherwise	R
<i>OSSWTH</i>	<i>000-999</i>	3	Swath Width for <i>OSSNSR = SAR...</i> ; <i>000</i> otherwise	R
<i>OSPOL</i>	<i>HH or HV or VH or VV or spaces</i>	2	Polarization for <i>OSSNSR = SAR...</i> ; spaces otherwise	R
<i>OSSPD</i>	<i>XXXXY</i>	5	Ground Speed for <i>OSSNSR = SAR...</i> ; <i>000YY</i> or Ground Speed otherwise	R
<i>OSDRFT</i>	<i>XXY</i>	3	Drift for <i>OSSNSR = SAR...</i> ; <i>00Y</i> or Drift otherwise	R
<i>OSPTCH</i>	<i>XXY</i>	3	Pitch Angle for <i>OSSNSR = SAR...</i> ; <i>00Y</i> or Pitch Angle otherwise	R

FIELD	VALUE	SIZE	DESCRIPTION	TYPE
<i>OSROLL</i>	XXY	3	Roll Angle for <i>OSSNSR</i> = <i>SAR...</i> ; <i>00Y</i> or Roll Angle otherwise	R
<i>OSADDL</i>	00000-99898	5	Length of Additional Items in bytes	R
<i>OSADDAN</i>	(User-defined)	User-defined 0-99898	Additional Annotation Data (User-defined in accordance with accompanying interface control document (ICD))	C (<i>OSADDL</i> >0)

OSFLT

This field contains the reference number of the observation flight during which the image data was collected. The format of the field is described in Appendix 1 to Treaty Annex B.

OSDAT

This field contains the date of the observation flight in Co-ordinated Universal Time in the format CCYYMMDD, where CCYY is the four digit year, MM is the month (01-12) and DD is the day of the month (01-31).

OSSNSR

This field contains sensor description information in the format specified in Appendix 1 to Treaty Annex B.

SENSINSTAL

This field contains the 10 character sensor installation number (AAA-B-C-DD) identical to that used in the Open Skies Notification Formats 4, 5, and 6, where AAA is *INT* or *POD* to indicate internal or podded installation, B is a number to indicate relative position from nose to tail for internal sensors or pod mounting location for podded sensors (*L* = mounted under left wing, *R* = mounted under right wing, *C* = mounted on aircraft centre-line), C is type of installation (*V* = vertical, *L* = left, *R* = right, *F* = fan of two or more sensors), DD is depression angle in degrees for vertical and oblique sensors, or for fan installations, total number of sensors followed by individual sensor number in sequence from left to right relative to direction of flight.

OSFCLL

This field contains the focal length of the sensor in millimetres. If focal length is not applicable, then the value of this field is *000*.

OSDTG

This field contains the date and time that the data was collected to the nearest minute of Co-ordinated Universal Time. The format of this field is CCYYMMDDhhmm, where CCYY is the four digit year, MM is the month (01-12) and DD is the day of the month (01-31), hh is the hour (00-23), mm is the minute (00-59).

OSHAGL

This field contains the average height above ground level of the observation aircraft. The format of this field is XXXXXY, where XXXXX is a 5-digit number and Y is a 1-letter code representing the units of measurement; valid codes are *F* indicating units of feet, or *M* indicating units of metres.

OSLOC

This field contains the latitude and longitude of the position of the observation aircraft in units of degrees to the nearest one-hundredth of a degree in the format “dd.dd(*N* or *S*) ddd.dd(*E* or *W*)” or in units of degrees and minutes to the nearest minute in the format “dd mm(*N* or *S*) ddd mm(*E* or *W*)”.

OSHDG

This field contains the true heading of the observation aircraft in units of degrees to the nearest degree.

OSSCAN

If the sensor category is SAR (i.e., *OSSNSR* = *SARXYY*), then this field contains the value *000*. Otherwise, this field contains the scan angle of the sensor in degrees.

OSLDA

If the sensor category is not SAR (i.e., *OSSNSR* ≠ *SARXYY*), then this field contains the value *00*. Otherwise, this field contains the look down angle to the nearest point of the swath width in units of degrees measured from the vertical.

OSNEAR

If the sensor category is not SAR (i.e., *OSSNSR* ≠ *SARXYY*), then this field contains the value *00*. Otherwise, this field contains the ground distance to the nearest point of the swath width in units of kilometres.

OSSWTH

If the sensor category is not SAR (i.e., *OSSNSR* ≠ *SARXYY*), then this field contains the value *000*. Otherwise, this field contains the swath width measured in units of kilometres.

OSPOL

If the sensor category is not SAR (i.e., $OSSNSR \neq SARXYY$), then this field contains spaces. Otherwise, this field contains the polarizations of the radar. Valid entries are HH, HV, VH, and VV.

OSSPD

If the sensor category is not SAR (i.e., $OSSNSR \neq SARXYY$), then this field shall contain the value 000YY, or optionally, the ground speed of the observation aircraft. For SAR, this field shall contain the ground speed of the observation aircraft. The format of the field is XXXYY, where XXX is a 3-digit number and YY is a 2-letter code representing the units of measurement; valid codes are NM indicating nautical miles per hour, or KM indicating kilometres per hour.

OSDRFT

If the sensor category is not SAR (i.e., $OSSNSR \neq SARXYY$), then this field shall contain the value 00Y, or optionally, the drift angle of the observation aircraft. For SAR, this field shall contain the drift angle of the observation aircraft in units of degrees. The format of this field is XXY where XX is a 2-digit number and Y is a 1-letter code representing the direction of drift; valid codes are L indicating drift is to the left, or R indicating drift is to the right, relative to the flight path of the observation aircraft.

OSPTCH

If the sensor category is not SAR (i.e., $OSSNSR \neq SARXYY$), then this field shall contain the value 00Y, or optionally, the pitch angle of the observation aircraft. For SAR, this field shall contain the pitch angle of the observation aircraft in units of degrees. The format of this field is XXY where XX is a 2-digit number and Y is a 1-letter code representing the direction of pitch; valid codes are U indicating pitch is up, or D indicating pitch is down, relative to the horizontal.

OSROLL

If the sensor category is not SAR (i.e., $OSSNSR \neq SARXYY$), then this field shall contain the value 00Y, or optionally, the roll angle of the observation aircraft. For SAR, this field shall contain the roll angle of the observation aircraft in units of degrees. The format of this field is XXY where XX is a 2-digit number and Y is a 1-letter code representing the direction of pitch; valid codes are L indicating roll is to the left, or R indicating roll is to the right.

OSADDL

This field contains the length in bytes of the data contained in OSADDAN.

OSADDAN

This field contains additional annotation information that is allowed by Decision Number Nine. The length of this field shall not cause any BIIF field length limits to be exceeded, but is otherwise fully definable for each annotation data system. If the additional data is too long to fit in the UDID field, it shall be put in a data extension segment.

DATA EXTENSION SEGMENT SUBHEADER

FIELD	VALUE	SIZE	DESCRIPTION	TYPE
<i>DE</i>	<i>DE</i>	2	Data Extension Segment Subheader Identifier	R
<i>DESID</i>	<i>TRE_OVERFLOW</i> or <i>TRANSPORTABLE_FILE_STRUCT</i> (followed by spaces)	25	Unique DES Type Identifier	R
<i>DESVER</i>	01-99	2	Version of data field definition	R
<i>DESCLAS</i>	<i>FOR OPEN SKIES PURPOSES ONLY</i> (followed by 139 spaces)	167	DES Security Classification	R
<i>DESOFLOW</i>	<i>UDHD</i> or <i>UDID</i> or <i>IXSHD</i> or <i>TXSHD</i> (followed by spaces), otherwise omitted	6	Identifies extension field which overflows into DES	C
<i>DESITEM</i>	000-999	3	Number of the data item overflowing into DES.	C
<i>DESSL</i>	0000	4	Length of <i>DESSH</i> ; Required to be 0000 when <i>DESID</i> = <i>TRE_OVERFLOW</i>	R
<i>DESSH</i>	(User-defined)	User-defined	User-defined Subheader Fields. Not Present if <i>DESSL</i> = 0000	C
<i>DESDATA</i>	(User-defined)	User-Defined	User-defined Data Field	R

OPEN SKIES DIGITAL DATA EXCHANGE FORMAT (OSDDEF) MEDIA ANNOTATION AND MEDIA DIRECTORY FILE EXAMPLES

A. Example OSDDEF MEDIA ANNOTATION file on an exchange medium containing OSDDEF image files from a single configuration of a video camera

1. Example OSDDEF Header for OSDDEF MEDIA ANNOTATION file on an exchange medium containing OSDDEF image files from a single configuration of a video camera

Field	Size	Value
<i>FHDR</i>	4	OSDE
<i>FVER</i>	5	01.00
<i>CLEVEL</i>	2	00
<i>STYPE</i>	4	BF01
<i>OSTAID</i>	10	OPEN SKIES
<i>FDT</i>	14	19961002103000
<i>FTITLE</i>	80	OPEN SKIES DIGITAL DATA EXCHANGE MEDIA ANNOTATION
<i>FSEC</i>	167	FOR OPEN SKIES PURPOSES ONLY
<i>FSCOP</i>	5	00000
<i>FSCPYS</i>	5	00000
<i>ENCRYP</i>	1	0
<i>OID</i>	45	USA
<i>FL</i>	12	000000000722
<i>HL</i>	6	000397
<i>NUMI</i>	3	000
<i>NUMS</i>	3	000
<i>NUMX</i>	3	000
<i>NUMT</i>	3	001
<i>LTSH001</i>	4	0282
<i>LT001</i>	5	00043
<i>NUMDES</i>	3	000
<i>NUMRES</i>	3	000
<i>UDHDL</i>	5	00000
<i>XHDL</i>	5	00000

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2. Example OSDDEF Text Subheader for OSDDEF MEDIA ANNOTATION FILE on an exchange medium containing OSDDEF image files from a single configuration of a video sensor

Field	Size	Value
<i>TE</i>	2	TE
<i>TEXTID</i>	10	MEDIA HDR
<i>TXTDT</i>	14	19961002103000
<i>TXTTTL</i>	80	OPEN SKIES MEDIA ANNOTATION
<i>TSSEC</i>	167	FOR OPEN SKIES PURPOSES ONLY
<i>ENCRYP</i>	1	0
<i>TXTFMT</i>	3	STA
<i>TXSHDL</i>	5	00000

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3. Example OSDDEF Text Data for OSDDEF MEDIA ANNOTATION file on an exchange medium containing OSDDEF image files from a single configuration of a video sensor The Text Data segment consists of:
 - (a) Observation Flight reference number as defined in Treaty Annex B, Appendix 1, paragraph 1. (6 characters+ Carriage Return + Line Feed)
 - (b) Date of Observation Flight in Co-ordinated Universal Time to the nearest day. (8 characters, CCYYMMDD where CCYY is the four digit year, MM is month, and DD is day+ Carriage Return + Line Feed)

Repeated for each sensor recording imagery on the medium:

- (c) Sensor Description as defined in Treaty Annex B, Appendix 1 paragraph 2. (6 characters+ Carriage Return + Line Feed)
- (d) Sensor Configuration, as described in Treaty Annex B, Appendix 1, paragraph 3. (10 characters — as reported in the Notification Formats field SENSINSTAL+ Carriage Return + Line Feed)
- (e) Focal Length in millimetres, if applicable. (3 characters +_Carriage Return + Line Feed.)

As stored in the Text Segment the Media Annotation data, 45 characters in length, appears as:

```
OS5423<CR><LF>19961002<CR><LF>TVTD <CR><LF>INT-2-V-90<CR><LF>120<CR><LF>
```

As displayed by a word processor, the Text Segment the data appears as:

1	2	3	4	5	
12345678901234567890123456789012345678901234567890123					

OS6423 19961002 TVTD INT-2-V-90 120

- B. Example OSDDEF MEDIA_DIRECTORY.BIF file on a direct access exchange containing 1500 OSDDEF image files from a video sensor configurations
 1. Example File Header for MEDIA_DIRECTORY.BIF file on a direct access exchange medium containing 1500 OSDDEF image files from a video sensor configuration

Field	Size	Value
<i>FHDR</i>	4	OSDE
<i>FVER</i>	5	01.00
<i>CLEVEL</i>	2	00
<i>STYPE</i>	4	BF01
<i>OСТАID</i>	10	OPEN SKIES
<i>FDT</i>	14	19961002103000
<i>FTITLE</i>	80	OPEN SKIES DIGITAL DATA EXCHANGE MEDIA DIRECTORY
<i>FSEC</i>	167	FOR OPEN SKIES PURPOSES ONLY
<i>ENCRYP</i>	1	0
<i>OID</i>	45	USA
<i>FL</i>	12	000000146480
<i>HL</i>	6	000406
<i>NUMI</i>	3	000
<i>NUMS</i>	3	000
<i>NUMX</i>	3	000
<i>NUMT</i>	3	002
<i>LTSH001</i>	4	0282
<i>LT001</i>	5	94585
<i>LTSH002</i>	4	0282
<i>LT002</i>	5	50925
<i>NUMDES</i>	3	000
<i>NUMRES</i>	3	000
<i>UDHDL</i>	5	00000
<i>XHDL</i>	5	00000

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- Example Text Subheaders for MEDIA_DIRECTORY.BIF file on a direct access exchange medium containing 1500 OSDDEF image files from several sensor configurations. There are two identical subheaders in MEDIA_DIRECTORY.BIF. The first follows immediately after the end of the file header, and the second follows immediately after the text in the first Text Data segment

Field	Size	Value
<i>TE</i>	2	TE
<i>TEXTID</i>	10	OSDDEF DIR
<i>TXTDT</i>	14	19961002103000
<i>TXTTTL</i>	80	OPEN SKIES MEDIA DIRECTORY
<i>TSSEC</i>	167	FOR OPEN SKIES PURPOSES ONLY
<i>ENCRYP</i>	1	0
<i>TXTFMT</i>	3	STA
<i>TXSHDL</i>	5	00000

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- Example Text Data for MEDIA_DIRECTORY.BIF file on a direct access exchange medium containing 1500 OSDDEF image files

The first Text Data segment consists of a single line of text containing the number of OSDDEF image files on the exchange medium (8 characters + Carriage Return + Line Feed), followed by one line of text for each OSDDEF image file on the exchange medium, up to the capacity of the Text Data segment, which is 99999

characters. MEDIA_DIRECTORY.BIF may contain as many (up to 999) Text Segments as is required to contain an entry for each image file on the medium.

Each 95 character OSDDEF MEDIA DIRECTORY FILE entry consists of:

- (A) A 12 character date and time of image in Co-ordinated Universal Time. (columns 1-12)
- (B) A 6 character Sensor Description, consisting of a group of up to 4 characters specifying the category of the sensor followed by a 2 character group representing the type of recording medium. (columns 13-18)
- (C) A 12 character Sensor Configuration Number (CC-RRRR-SSSS) identical to that used in Formats 4, 5, 6, 8 and 25 (columns 19-30) (CC = two letter country code; RRRR = "TVLI", "TVFI", "IRLS" or "SAR"; SSSS = nationally assigned unique string of 4 digits)
- (D) A 3 numeric character Focal Length, if applicable; otherwise spaces. (columns 31-33)
- (E) A 14 character Aircraft Location in decimal degrees (dd.dd(N or S) ddd.dd(E or W)) or degrees-minutes (dd mm(N or S) ddd mm(E or W)). (columns 34-47)
- (F) A 48 numeric character OSDDEF image file name. (columns 48-95)
- (G) Carriage Return + Line Feed. (columns 96-97.)

As seen by a word processor, the Text Data of the first Text segment would appear as follows (where ^ is used to indicate the presence of a space character in the Text Data).

```

1 2 3 4 5 6 7 8 9
123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890
00001500
199605071207TVTD US-TVLI-807612043.67N 017.45EOS6042US-OF_-3007199605071207_1.BIF ^^^^^^^^^^^^^
199605071207TVTD US-TVLI-807612043.67N 017.45EOS6042US-OF_-3007199605071207_2.BIF ^^^^^^^^^^^^^
199605071207TVTD US-TVLI-807612043.67N 017.45EOS6042US-OF_-3007199605071207_3.BIF ^^^^^^^^^^^^^
199605071208TVTD US-TVLI-807612043.67N 017.45EOS6042US-OF_-3007199605071208_4.BIF ^^^^^^^^^^^^^
.
.
.
199605071207TVTD US-TVLI-807612043.67N 017.45EOS6042US-OF_-3007199605071207_975.BIF ^^^^^^^^^^^^^

```

As seen by a word processor, the Text Data of the second Text segment would appear as follows (where ^ is used to indicate the presence of a space character in the Text Data).

```

1 2 3 4 5 6 7 8 9
123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890
199605071207TVTD US-TVLI-807612043.67N 017.45EOS6042US-OF_-3007199605071207_976.BIF ^^^^^^^^^^^^^
199605071207TVTD US-TVLI-807612043.67N 017.45EOS6042US-OF_-3007199605071207_977.BIF ^^^^^^^^^^^^^
199605071207TVTD US-TVLI-807612043.67N 017.45EOS6042US-OF_-3007199605071207_978.BIF ^^^^^^^^^^^^^
.
.
.
199605071208TVTD US-TVLI-807612043.67N 017.45EOS6042US-OF_-3007199605071208_1500.BIF ^^^^^^^^^^^^^

```

EXAMPLE ENTRIES IN DATA AND FIELD TABLES

- A. Examples of recorded information (Each file contains 512 image lines.):
1. **TV1:** Image obtained from a 512 x 512 frame format, black & white video imaging system;
 2. **TV2:** Image from a line scanning (6000 elements per line) colour video imaging system;
 3. **IR:** Image from a line scanning infrared detector (13,000 elements per line).
 4. **SARIMG:** Image obtained from a synthetic aperture radar (13,000 elements / slant range).
 5. **SARIQ:** Radio hologram (initial phase information) from a synthetic aperture radar with 13,000 elements / slant range.
- B. Example file header (Tables in Annex A)

Host's Comment: All of the changes in Tables 1 and 2 correct errors found in the original draft

Table 1

Field	Size	TV1	TV2	IR	SARIMG	SARIQ	Rem.
<i>FHDR</i>	4	OSDE	OSDE	OSDE	OSDE	OSDE	
<i>FVER</i>	5	01.00	01.00	01.00	01.00	01.00	
<i>CLEVEL</i>	2	00	00	00	00	00	
<i>STYPE</i>	4	BF01	BF01	BF01	BF01	BF01	
<i>OSTAID</i>	10	OPEN SKIES					
<i>FDT</i>	14	19961002103000	19961002103000	19961002103000	19961002103000	19961002103000	
<i>FTITLE</i>	80	OPEN SKIES DIGITAL DATA EXCHANGE IMAGE DATA	OPEN SKIES DIGITAL DATA EXCHANGE IMAGE DATA	OPEN SKIES DIGITAL DATA EXCHANGE IMAGE DATA	OPEN SKIES DIGITAL DATA EXCHANGE IMAGE DATA	OPEN SKIES DIGITAL DATA EXCHANGE IMAGE DATA	
<i>FSEC</i>	167	FOR OPEN SKIES PURPOSES ONLY					
<i>FSCOP</i>	5	00000	00000	00000	00000	00000	
<i>FSCPYS</i>	5	00000	00000	00000	00000	00000	
<i>ENCRYP</i>	1	0	0	0	0	0	
<i>OID</i>	45	RUSSIA	RUSSIA	RUSSIA	RUSSIA	RUSSIA	
<i>FL</i>	12	000000263377	000009217259	000006657233	000006657233	000013315136	
<i>HL</i>	6	00413	00413	000413	00413	00413	
<i>NUMI</i>	3	001	001	001	001	001	
<i>LISH001</i>	6	000439	000465	00439	00439	00576	
<i>LI001</i>	10	0000262144	0009216000	0006656000	0006656000	0013314048	
<i>NUMS</i>	3	000	000	000	000	000	
<i>NUMX</i>	3	000	000	000	000	000	
<i>NUMT</i>	3	001	001	001	001	001	
<i>LTSH001</i>	4	0282	0282	0282	0282	0282	
<i>LT001</i>	5	00099	00099	00099	000991	00099	
<i>NUMDES</i>	3	000	000	000	000	000	
<i>NUMRES</i>	3	000	000	000	000	000	
<i>UDHDL</i>	5	00000	00000	00000	00000	00000	
<i>XHDL</i>	5	00000	00000	00000	00000	00000	

C. Example image data subheader (Annex B Tables)

Table 2

Field	Size	TV1	TV2	IR	SARIMG	SARIQ	Rem.
<i>IM</i>	2	IM	IM	IM	IM	IM	
<i>IID</i>	10	0000000001	0000000001	0000000001	0000000001	0000000001	Frame No. or Line Counter
<i>IDATIM</i>	14	19961002103000	19961002103000	19961002103000	19961002103000	19961002103000	
<i>IINFO</i>	97	OPEN SKIES IMAGE	User-defined image information				
<i>ISCSEC</i>	167	FOR OPEN SKIES PURPOSES ONLY					
<i>ENCRYP</i>	1	0	0	0	0	0	
<i>ISORCE</i>	42	RF-TVFI-0001	RF-TVLI-0001	RF-IRLS-0001	RF-SAR-0001	RF-SAR-0001	Sensor Configuration Number
<i>NROWS</i>	8	00000512	00000512	00000512	00000512	00000512	
<i>NCOLS</i>	8	00000512	00006000	00013000	00013000	00013002	
<i>PVTYPE</i>	3	INT	INT	INT	INT	SI	
<i>IREP</i>	8	MONO	RGB	MONO	MONO	MONO	
<i>ICAT</i>	8	VIS	VIS	IR	SAR	SARIQ	
<i>ABPP</i>	2	08	08	08	08	16	
<i>PJUST</i>	1	R	R	R	R	R	
<i>ICORDS</i>	1	(space)	(space)	(space)	(space)	(space)	
<i>NICOM</i>	1	0	0	0	0	0	
<i>IC</i>	2	NC	NC	NC	NC	NC	
<i>NBANDS</i>	1	1	3	1	1	1	
<i>IREPBAND1</i>	2	(2 spaces)	R	(2 spaces)	(2 spaces)	(2 spaces)	
<i>ISUBCAT1</i>	6	00.530	00.630	10.000	04.000	04.000	
<i>IFC1</i>	1	N	N	N	N	N	
<i>IMFLT1</i>	3	(3 spaces)					
<i>NLUTS1</i>	1	0	0	0	0	0	
<i>IREPBAND2</i>	2		G				
<i>ISUBCAT2</i>	6		00.530				
<i>IFC2</i>	1		N				
<i>IMFLT2</i>	3		(3 spaces)				
<i>NLUTS2</i>	1		0				
<i>IREPBAND3</i>	2		B				
<i>ISUBCAT3</i>	6		00.450				
<i>IFC3</i>	1		N				
<i>IMFLT3</i>	3		(3 spaces)				
<i>NLUTS3</i>	1		0				
<i>ISYNC</i>	1	0	0	0	0	0	
<i>IMODE</i>	1	B	P	B	B	B	
<i>NBPR</i>	4	0001	0001	0002	0002	0002	
<i>NBPC</i>	4	0001	0001	0001	0001	0001	
<i>NPPBH</i>	4	0512	6000	6500	6500	6500	
<i>NPPBV</i>	4	0512	0512	0512	0512	0512	
<i>NBPP</i>	2	08	08	08	08	16	
<i>IDLVL</i>	3	001	001	001	001	001	
<i>IALVL</i>	3	000	000	000	000	000	
<i>ILOC</i>	10	0000000000	0000000000	0000000000	0000000000	0000000000	
<i>IMAG</i>	4	1.00	1.00	1.00	1.00	1.00	
<i>UDIDL</i>	5	00000	00000	00000	00000	00137	
<i>UDOFL</i>	3					000	
<i>UDID</i>						Table 4	
<i>IXSHDL</i>	5	00000	00000	00000	00000	00000	

D. Example OSDDEF Text Subheader

Table 3

Field	Size	Contents
<i>TE</i>	2	TE
<i>TEXTID</i>	10	ANNOTATION
<i>TXTDT</i>	14	19961002103000
<i>TXTITL</i>	80	OPEN SKIES IMAGE ANNOTATION
<i>TSSEC</i>	167	FOR OPEN SKIES PURPOSES ONLY
<i>ENCRYP</i>	1	0
<i>TXTFMT</i>	3	STA
<i>TXSHDL</i>	5	00000

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E. Example field record expansions for the SAR initial phase data (Annex C Tables)

Table 4

Field	Size	Value	Comments
<i>TRETAG</i>	6	RUSAR1	
<i>TREL</i>	5	00123	
<i>TREDATA</i>	123	User-defined Registered Extension for SAR Data Table 5	

F. User-Defined Registered Extension For SAR Data.

Table 5

Field	Size	Value	Comments
<i>SARTYP</i>	20	LINEAR FM CHIRP	
<i>SARRT</i>	1	R	
<i>SARSLANTMN</i>	5	04000	
<i>SARFW</i>	1	F	
<i>SAROPFREQ</i>	8	09000.00	
<i>SARBANDTX</i>	6	040.00	
<i>SARDUR</i>	7	10.0000	
<i>SARNP</i>	1	P	
<i>SARPULSES</i>	8	2000.000	
<i>SARVEL</i>	8	010.0000	
<i>SARAAB</i>	6	0.0523	
<i>SARRANNUM</i>	5	00001	
<i>SARNL</i>	5	00042	Length of Description
<i>SARNDAT</i>	42	Table 6	Synthetic aperture radar micronavigational parameters

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G. Expansion of synthetic aperture radar micronavigation parameters from Table 5 (SARNDAT data)

Table 6

Field	Size	Value	Comments
SARNDAT11	6	Vx	X-axis velocity
SARNDAT12	1	4	field size in bits
SARNDAT21	6	Vy	Y-axis velocity
SARNDAT22	1	4	field size in bits
SARNDAT31	6	Vz	Z-axis velocity
SARNDAT32	1	4	field size in bits
SARNDAT41	6	Ax	X-axis acceleration
SARNDAT42	1	4	field size in bits
SARNDAT51	6	Ay	Y-axis acceleration
SARNDAT52	1	4	field size in bits
SARNDAT61	6	Az	Z-axis acceleration
SARNDAT62	1	4	field size in bits

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Configuration of synthetic aperture radar phase data corresponding to Table 6, stored in a single row of (16 bit SI) data in the image data section. Note the use of a filler byte in the column 2 entry. This is needed to align the start of the IQ data with the start of a 16 bit SI value entry.

Table 7a

Size (in bits)	4	4	4	4	4	4	8	8	8	8	8	8	8	8	8
Contents	Vx	Vy	Vz	ax	ay	az	0	I(1)	Q(1)	I(2)	Q(2)	I(13000)	Q(13000)
Column (SI entry) Number	1			2			3		4		...		13002		

13002 columns/row*2 bytes/column=26004 bytes/row

(Note also that it is possible to treat the 13000 IQ data pairs as 26000 8 bit entries (APBB = 8). In that case the filler byte would not be necessary, and we could have NCOLS = 26003, and both FL and LI001 would be 512 bytes smaller. Regardless of the specific procedure used to store SARIQ data, it is essential that a State Party provide all of the information needed to properly extract the initial phase information and any ancillary data that is use to process it.)

A second example configuration of synthetic aperture radar phase data.

Table 7b

FIELD	Size	Value	Description
	128		SAR specific Header Data
	26624		SAR IQ Data

Sum: 26752

H. Example Data Extension Segment (DES) (Table in Annex F). This table is constructed assuming there is overflow from a tagged record extension field into a DES. The field DESDATA is user-defined in both size and value and would be dependent on the tagged record extension which overflowed from the UDHD field.

Table 8

Field	Size	TV1	TV2	IR	SARIMG	SARIQ	Rem
<i>DE</i>	2	DE	DE	DE	DE	DE	
<i>DESID</i>	25	TRE_OVERFLOW	TRE_OVERFLOW	TRE_OVERFLOW	TRE_OVERFLOW	TRE_OVERFLOW	
<i>DESVER</i>	2	01	01	01	01	01	
<i>DESCLAS</i>	167	FOR OPEN SKIES PURPOSES ONLY					
<i>DESOFW</i>	6	UDID	UDID	UDID	UDID	UDID	
<i>DESITEM</i>	3	001	001	001	001	001	
<i>DESSHL</i>	4	0000	0000	0000	0000	0000	
<i>DESDATA</i>	TBD	user defined					

209+TBD (To Be Defined)