

1. Change title:

“Visible, Infrared, and Multispectral Airborne Sensor Support Data Extensions (~~SDE~~) for the National Imagery Transmission Format (~~Version 2.0~~) of the National Imagery Transmission Format Standards”

2. Add official seal to cover:



3. Change section 1.1, sentences 2-3:

The specified tagged records incorporate all Support Data Extensions (SDE) relevant to visible/infrared/multispectral/ hyperspectral (EO-IR-MSI-HSI) ~~imagery~~primary, but they are not yet explicitly included. The information which makes up the SDE is derived from ~~several referenced~~ interface documents.

4. Add section 1.5:

1.5 Comments.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to Reconnaissance Mission Area Group, 2640 Loop Road W, Wright-Patterson AFB OH 45433-7106.

5. Change section 4.1.3, sentence 3:

Several are similar to existing and proposed extensions developed by other programs and sensors, including airborne Synthetic Aperture Radar (SAR), and can be considered aliases to those extensions (e.g., ~~AIMIDB AIMIDA~~ is nearly identical with STDIDC used for commercial satellite imagery).

6. Change section 4.1.3, third paragraph, sentences 3-4:

For example, section 5.~~43~~ describes the ~~BLOCKACFT~~ or ~~Image Block Aircraft Information~~ extension. The actual tag, however, is ~~BLOCKBACFTA~~. If in the future, a change is made, section 5.~~43~~ will continue to describe the ~~ACFT BLOCK~~ or ~~Image Block~~

3 March 1999 ERRATA to
Visible, Infrared, and Multispectral Airborne Sensor Support Data Extension, 25 September 1997
~~Aircraft Information~~ extensions, but would include a definition of both the
~~BLOCKAACFTA~~ and ~~BLOCKBACFTB~~ tagged extensions.

7. Change section 5.2, sentences 2-3:

The format and description for the user defined fields of the ~~AIMIDB AIMIDA~~ extension are detailed in Table 1. A single ~~AIMIDB AIMIDA~~ is placed in the Image Subheader; where several images relate to a single scene, an ~~AIMIDB AIMIDA~~ is placed in the first ~~or~~ may be placed in each applicable Image Subheader. Note that the fields from ACQUISITION DATE through END_TILE_ROW, inclusive, constitute the ST_ID field in the STEROB extension of a stereo mate image, and portions of these fields shall constitute the first forty characters of the Image Subheader ITITLE field. Table 3A illustrates the mapping between ITITLE and these fields.

8. Change title of Table 3

Table 1 ~~AIMIDB AIMIDA~~— Additional Image ID Extension Format:

9. Change selected entries in Table 3:

FIELD	NAME	SIZE	VALUE RANGE	UNITS	TYPE
CETAG	Unique Extension Identifier.	6	AIMIDB AIMIDA	n/a	R
CEL	Length of Entire Tagged Record.	5	00089	Bytes	R
<i>The following fields define AIMIDB AIMIDA</i>					

MISSION NO	Mission Number Identification. Four teen character descriptor of the mission, <u>which must always begin with an alpha character. If available, the DIA Project Code, which has an allowable range of AA to ZZ, shall be used as the first two characters, followed by 2 spaces. “UNKN” (without quotes) shall be used if the specific descriptor is unknown.</u> Contents are user defined.	14	alphanumeric		R
<u>MISSION IDENTIFICATION</u>	<u>Name of the Mission. The Air Tasking Order Mission Number should be used, if available, followed by spaces. “NOT AVAIL.” (without quotes) shall be used if the Mission name is unavailable.</u>	<u>10</u>	<u>Alphanumeric</u>		<u><R></u>

**3 March 1999 ERRATA to
Visible, Infrared, and Multispectral Airborne Sensor Support Data Extension, 25 September 1997**

FIELD	NAME	SIZE	VALUE RANGE	UNITS	TYPE
FLIGHT_NO	Flight Number. Each flight shall ...	2	01 ... Z9		<u><R></u>

<u>STARTCURRENT</u> SEGMENT	<u>Start-Current Segment ID</u> . Identifies which segment (piece) of images as separate pieces (segments) within an imaging operation <u>contains this image</u> . AA is the first segment, AB is the second segment, etc. <u>This field shall contain 00 (numeric zeros) if the image is not segmented.</u>	2	00, AA to ZZ		R
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START_TILE_COLUMN	<u>Starting Tile Column Number</u> . For tiled (blocked) sub-images, the <u>number offset</u> of the first tile in the cross-scan direction relative to start of the original image tiling. Tiles are rectangular arrays of pixels that subdivide an image. <u>For untiled images this field shall contain 001.</u>	3	001 to 999	<u>blocks</u>	R
START_TILE_ROW	<u>Starting Tile Row Number</u> . For tiled (blocked) sub-images, the <u>number offset</u> of the first tile in the along-scan direction relative to start of the original image tiling. <u>For untiled images this field shall contain 00001.</u>	5	00001 to 99999	<u>blocks</u>	R
END_SEGMENT	<u>Ending Segment</u> . Ending segment-ID of this file <u>the imaging operation. This field shall contain 00 (numeric zeros) if the image is not segmented.</u>	2	<u>00</u> , AA to ZZ		R
END_TILE_COLUMN	<u>Ending Tile Column Number</u> . For tiled (blocked) sub-images, the <u>number offset</u> of the last tile in the cross-scan direction relative to start of the original image tiling. <u>For untiled images this field shall contain 001.</u>	3	001 to 999	<u>blocks</u>	R
END_TILE_ROW	<u>Ending Tile Row Number</u> . For tiled (blocked) sub-images, the <u>number offset</u> of the last tile in the along-scan direction relative to start of the original image tiling. <u>For untiled images this field shall contain 00001.</u>	5	00001 to 99999	<u>blocks</u>	R

**3 March 1999 ERRATA to
Visible, Infrared, and Multispectral Airborne Sensor Support Data Extension, 25 September 1997**

FIELD	NAME	SIZE	VALUE RANGE	UNITS	TYPE
LOCATION	<p><u>Location</u> of the natural reference point of the sensor provides a rough indication of geographic coverage. The format ddmmX represents degrees (00 to 89) and minutes (00 to 59) of latitude, with X = N or S for north or south, and dddmmY represents degrees (000 to 179) and minutes (00 to 59) of longitude, with Y = E or W for east or west, respectively.</p> <p>For SAR imagery the reference point is normally the center of the first image block.</p> <p>For EO-IR imagery the reference point for framing sensors is the center of the frame; for continuous sensors, it is the center of the first line.</p> <p><u>Spaces indicate the location is unavailable.</u></p>	11	DdmmXdddmmY. <u>spaces</u>		<u>≤R></u>

10. Add Table 3A:

TABLE 3A MAPPING BETWEEN AIMIDB AND ITITLE/IID2	
ITITLE/IID2 Location (Bytes)	AIMIDB Field
1 - 7	ACQUISITION_DATE (formatted as DDMonYY, where: DD is the day of the month, Mon is a three letter abbreviation of the month, JAN, FEB, ... DEC, YY is the least significant 2 digits of the year).
8 - 11	MISSION_NO
12 - 13	FLIGHT_NO
14 - 16	OP_NUM
17 - 18	START_SEGMENT
19 - 20	REPRO_NUM
21 - 23	REPLAY
24	Space
25 - 26	START_TILE_COLUMN (least significant 2 bytes)
27 - 31	START_TILE_ROW
32 - 33	END_SEGMENT
34 - 35	END_TILE_COLUMN (least significant 2 bytes)
36 - 40	END_TILE_ROW

11. Change section 5.3, sentence 2:

The format and descriptions for the user defined fields of the ~~ACFTBACFTA~~ extension are detailed in Table 2..

12. Change title of Table 4

Table 2. ~~ACFTBACFTA~~ — Aircraft Information Extension Format

13. Change selected entries in Table 4:

FIELD	NAME	SIZE	VALUE RANGE	UNITS	TYPE
CETAG	Unique Extension Identifier.	6	ACFTB ACFTA	n/a	R
CEL	Length of Entire Tagged Record.	5	00191	Bytes	R
<i>The following fields define ACFTB ACFTA</i>					
AC_MSN_ID	<u>Aircraft Mission Identification.</u> <u>Name of the Mission. “NOT</u> <u>AVAILABLE” (without quotes)</u> <u>shall be used if the Mission name</u> <u>is unavailable.</u>	20	Alphanumeric, “ <u>NOT AVAILABLE</u> ”		R

**3 March 1999 ERRATA to
Visible, Infrared, and Multispectral Airborne Sensor Support Data Extension, 25 September 1997**

FIELD	NAME	SIZE	VALUE RANGE	UNITS	TYPE
SENSOR_ID_TYPE	<p><u>Sensor ID TYPE</u>. Identifies which specific-sensor <u>type</u> produced the image.</p> <p>Examples: For Radar Imagery:</p> <p><u>SAR</u></p> <p>ASARS-1 (Advanced SAR on SR-71)</p> <p>ASARS-2 (Advanced SAR on U-2)</p> <p>GHR (Global Hawk Radar)</p> <p>TSAR (Tactical SAR on Predator)</p> <p>For EO-IR:</p> <p>ccff where cc indicates the sensor category:</p> <p>IH (High Altitude / Long Range IR)</p> <p>IM (Medium Altitude IR)</p> <p>IL (Low Altitude IR)</p> <p>MH (Multispectral High Altitude / Long Range)</p> <p>MM (Multispectral Medium Altitude)</p> <p>ML (Multispectral Low Altitude)</p> <p>VH (Visible High Altitude / Long Range)</p> <p>VM (Visible Medium Altitude)</p> <p>VL (Visible Low Altitude)</p> <p>VF (Video Frame)</p> <p>And ff indicates the sensor format:</p> <p>FR (Frame)</p> <p>LS (Line Scan)</p> <p>PB (Pushbroom)</p> <p>PS (Pan Scan)</p> <p><u>Content of several fields below depends upon the value of this field.</u></p>	104	Alphanumeric		R

**3 March 1999 ERRATA to
Visible, Infrared, and Multispectral Airborne Sensor Support Data Extension, 25 September 1997**

FIELD	NAME	SIZE	VALUE RANGE	UNITS	TYPE
<u>SENSOR_ID</u>	<u>Identifies which specific sensor produced the image. Currently allowable values:</u> <u>APG-73</u> <u>AIP</u> <u>ASARS-1</u> <u>ASARS-2</u> <u>CA236 (Darkstar EO)</u> <u>CA260</u> <u>CA261</u> <u>CA265</u> <u>CA270</u> <u>CA295</u> <u>D500</u> <u>DB110</u> <u>DS-SAR</u> <u>GHR (Global Hawk Radar)</u> <u>HYDICE</u> <u>HSAR</u> <u>LAEO</u> <u>MAEO</u> <u>SIR-C</u> <u>SYERS</u> <u>TSAR (Tactical SAR on Predator)</u> <u>Other values are TBD.</u> <u>Content of several fields below depends upon the value of this field.</u>	<u>6</u>	<u>Alphanumeric</u>		<u>R</u>
IMHOSTNO	<u>Immediate Scene Host.</u> Together with Immediate Scene Request ID below, denotes the scene that the immediate was initiated from and can be used to renumber the scene, Example: If the immediate scene was initiated from scene number 123 and this is the third request from that scene, then the scene number field will be zero, the immediate scene host field will contain 123 and the immediate scene request id will contain 3. Only valid for immediate scenes.	6	000000 to <u>999999</u> 000511		<R>
IMREQID	Immediate Scene Request ID	5	00000 to <u>99999</u> 32768		<R>

**3 March 1999 ERRATA to
Visible, Infrared, and Multispectral Airborne Sensor Support Data Extension, 25 September 1997**

FIELD	NAME	SIZE	VALUE RANGE	UNITS	TYPE
MPLAN	<p><u>Mission Plan Mode.</u> Defines the current sensor-specific SENSOR_TYPE / SENSOR_ID collection mode.</p> <p>For AIP:</p> <p>013 – Monopulse Calibration</p> <p>014 – Wide Area MTI (WAMTI)</p> <p>015 – Coarse Resolution Search</p> <p>016 – Medium Resolution Search</p> <p>017 – High Resolution Search</p> <p>018 – Point Imaging</p> <p>019 – Swath MTI (SMTI)</p> <p>020 – Repetitive Point Imaging</p> <p>For ASARS-2:</p> <p>001 – Search</p> <p>002 – Spot 3</p> <p>004 – Spot 1</p> <p>007 – Continuous Spot 3</p> <p>008 – Continuous Spot 1</p> <p>009 – EMTI Wide Frame Search</p> <p>010 – EMTI Narrow Frame Search</p> <p>011 – EMTI Augmented Spot</p> <p>012 – EMTI Wide Area MTI (WAMTI)</p> <p>013 – Monopulse Calibration</p> <p>Other sensors:</p> <p>SAR – TBD</p> <p>EO-IR:</p> <p>001-003 – Reserved</p> <p>004 – EO Spot</p> <p>005 – EO Point Target</p> <p>006 – EO Wide Area Search</p> <p>014 – IR Spot</p> <p>015 – IR Point Target</p> <p>016 – IR Wide Area Search</p> <p><u>Other sensors: TBD</u></p> <p><u>017 – 999 are reserved</u></p>	3	001 to 999 016		R

ENTLOC	<u>Entry Location.</u>	25	ddmms.ssssX dddmms.ssssY or ±dd.dddddddd ±ddd.dddddddd		<R>
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**3 March 1999 ERRATA to
Visible, Infrared, and Multispectral Airborne Sensor Support Data Extension, 25 September 1997**

FIELD	NAME	SIZE	VALUE RANGE	UNITS	TYPE
<u>LOC ACCY</u>	<u>Location Accuracy. The 90% probable circular error in ENTLOC and EXITLOC position.</u>	<u>6</u>	<u>000.00 to 999.99</u>	<u>Feet</u>	<u><R></u>
ENT <u>ELV</u> <u>ALT</u>	<u>Entry Elevation. Imaging operation entry point ground elevation.</u> <u>Altitude</u>	6	-01000 to +30000	feet or meters	<R>
<u>ELV UNIT</u>	<u>Unit of Elevation. Defines unit for Entry and Exit Altitudes. f=feet, m=meters</u>	<u>1</u>	<u>f or m</u>		<u><R></u>

ROW_SPACING	<u>Row Spacing measured at the center of the image. Distance in the image plane between corresponding pixels of adjacent rows measured in feet or meters;</u> <u>or Angular center to center distance (pitch) between corresponding pixels of adjacent rows measured in micro-radians (μ-radians).</u> SAR: Ground plane distance between corresponding pixels of adjacent rows, measured in feet. EO-IR: Angle between corresponding pixels of adjacent rows, measured in microradians at center of image.	7	SAR: 00.0000 to 99.9999 EO-IR: 0000.00 to 9999.99	ft μ-radians	<R>
<u>ROW SPACING UNITS</u>	<u>Unit of Row Spacing.</u> <u>f = feet</u> <u>m = meters</u> <u>r = μ-radians</u> <u>u = unknown spacing</u>	<u>1</u>	<u>f, m or r</u>		<u>R</u>
COL_SPACING	<u>Column Spacing measured at the center of the image. Distance in the image plane between adjacent pixels within a row measured in feet or meters;</u> <u>or Angular center to center distance (pitch) between adjacent pixels within a row measured in micro-radians (μ-radians).</u> SAR: Ground plane distance between adjacent pixels within a row, measured in feet. EO-IR: Angle between adjacent pixels within a row, measured in microradians at center of image.	7	SAR: 00.0000 to 99.9999 EO-IR: 0000.00 to 9999.99	ft μ-radians	<R>

**3 March 1999 ERRATA to
Visible, Infrared, and Multispectral Airborne Sensor Support Data Extension, 25 September 1997**

FIELD	NAME	SIZE	VALUE RANGE	UNITS	TYPE
<u>COL_SPACING</u> <u>UNITS</u>	<u>Unit of Column Spacing.</u> <u>f = feet</u> <u>m = meters</u> <u>r = μ-radians</u> <u>u = unknown spacing</u>	<u>1</u>	<u>f, m or r</u>		<u>R</u>

PATCH_TOT	Patch <u>TotalTable</u> . Total Number of Patches contained in this file, and therefore, the number of PATCH extensions. Not used for EO-IR imagery.	4	SAR: Spot: 0000 to 0001 Search: 0001 to 0999 EO-IR: 0000		R
MTI_TOT	<u>MTI Total</u> . Total Number of MTIRP extensions contained in this file. Each MTIRP identifies 1 to 256 moving targets. Not used for EO-IR imagery.	3	SAR: 000 to 999 EO-IR: 000 <u>0</u>		R

14. Add Table 4a:

Table 4a. Row and Column Spacing

SENSOR_ID_TYPE	ROW_SPACING	COL_SPACING
SAR	Image plane distance (ft/m)	Image plane distance (ft/m)
ccFR	Angle between pixels (μ -radians)	Angle between pixels (μ -radians)
ccLS	Angle between pixels (μ -radians)	Image plane distance (ft)
ccPB	Image plane distance (ft)	Angle between pixels (μ -radians)
ccPS	Angle between pixels (μ -radians)	Angle between pixels (μ -radians)

15. Change selected entry in table 6:

SEC_BE	Basic Encyclopedia ID of secondary target, including the five character Target Category of the expanded BE.OSUFFIX (target designator).	15	Alphanumeric		<R>
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16. Add selected entries to Table 7 before BANDCOUNT:

ROW_SPACING	Row Spacing measured at the center of the image. Distance in the image plane between corresponding pixels of adjacent rows measured in feet or meters; or Angular center to center distance (pitch) between corresponding pixels of adjacent rows measured in micro-radians (μ -radians).	7	00.0000 to 99.9999 0000.00 to 9999.99	feet or meters μ -radians	R
ROW_SPACING_UNITS	<u>Unit of Row Spacing.</u> f = feet m = meters r = μ -radians	1	f, m or r		R
COL_SPACING	<u>Column Spacing</u> measured at the center of the image. Distance in the image plane between adjacent pixels within a row measured in feet or meters; or	7	00.0000 to 99.9999	feet or meters	R

**3 March 1999 ERRATA to
Visible, Infrared, and Multispectral Airborne Sensor Support Data Extension, 25 September 1997**

	Angular center to center distance (pitch) between adjacent pixels within a row measured in micro-radians (μ -radians).		0000.00 to 9999.99	μ -radians	
COL_SPACING_UNITS	<u>Unit of Column Spacing.</u> f = feet m = meters r = μ -radians	1	f, m or r		R
FOCAL_LENGTH	<u>Sensor Focal Length.</u> Effective distance from optical lens to sensor element(s), used when either ROW_SPACING_UNITS or COL_SPACING_UNITS indicates μ -radians. 999.99 indicates focal length is not available or not applicable to this sensor.	6	000.01 to 899.99, 999.99	cm	R

17. Change selected entry in Table 8:

PRIME_BE	Primary Target BE / <u>OSUFFIX</u> (target designator).	15	Alphanumeric		<R>
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18. Change selected entries in Table 9:

FIELD	NAME	SIZE	VALUE RANGE	UNITS	TYPE
TGT_NUM	<u>Pre-Planned Target Number.</u> A number assigned to each preplanned target, initialized at 1. Recorded in the mission target support data block and the mission catalog support data block to associate the two groups of information. The same number may be assigned to multiple mission catalog support blocks. Each mission target block shall have a unique number.	35	<u>00001</u> to <u>99999</u>		R
TGT_ID	Designator of Target	12	alphanumeric		<R>
TGT_BE	<u>Basic Encyclopedia ID</u> / OSUFFIX (target designator) of target.	15	alphanumeric		<R>

TGT_UTC	<u>UTC</u> Planned Time at Target. Format is hhmmssZ: hh = Hours, h = Minutes, ss = Sec, Z = time zone.	7	hhmmssZ		<u><R></u>
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**3 March 1999 ERRATA to
Visible, Infrared, and Multispectral Airborne Sensor Support Data Extension, 25 September 1997**

FIELD	NAME	SIZE	VALUE RANGE	UNITS	TYPE
TGT_ELEV	<u>Target Elevation</u> , MSL. Planned elevation of point target. For strip and area targets, this corresponds to the average elevation of the target area. Measured in feet or meters, as specified by TGT_ELEV_UNIT.	6	-01000 to +30000	feet or meters	<R>
TGT_ELEV_UNIT	<u>Unit of Target Elevation</u> . f = feet, m=meters.	1	f or m		<R>

19. Add selected entry to Table 11 before SENSOR_ALT:

SENSOR_ALT_ SOURCE	<u>Sensor Altitude Source</u> . B = Barometric Altimeter G = Global Positioning System M = Manual Entry	1	B, G, M		<R>
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20. Add selected entry to Table 11 before GROUND_SPD:

GROUND_SPD_ SOURCE	<u>Ground Speed Source</u> . R = Radar N = Navigation System G = Global Positioning System M = Manual Entry space = unknown	1	R, N, G, M, space		<R>
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21. Change selected entry in Table 11:

SWATH_FRAMES	<u>Number of Frames per Swath</u> . Swath is a continuous strip of frames swept out by the scanning motion of certain dynamic sensors.	24	0001 to 9999		<R>
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22. Change section 5.11, sentences 3-4:

There can be up to 3 ~~STERO STREO~~ extensions per image. The format and descriptions for the User Defined fields of the ~~STERO STREO~~ extension is ...