



NATO Air Force Armaments Group (NAFAG)
Joint Intelligence, Surveillance, and Reconnaissance
Capability Group (JISRCG)
NSIF Custodian Support Team

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ERRATA Sheet
NSIF CST (JISRCG)/E-1

NATO Joint ISR Capability Group
NATO Secondary Imagery Format
Custodian Support Team
Errata Sheet to AEDP-4

This document defines known editorial errors and/or technical changes in Allied Engineering Publication Documentation 4, the implementation guide to STANAG 4545 as of the date of release. Users of AEDP-4 should be aware that these error corrections and technical changes will be included in the next official release of AEDP-4 by the NATO Standardization Agency (NSA). This document is provided to the NATO user community for information only. The document referenced below is the current release of AEDP-4 and forms the baseline for use of the implementation guide.

It should be noted that editorial (or administrative) corrections will be incorporated into the next amendment at the direction of the STANAG Custodian. It is expected that changes will be collected in the form of this Errata Sheet until the Custodian decides that sufficient changes are identified to warrant an amendment. Technical changes will similarly be identified in this document until the Custodian and the 4545 Custodial Support Team (4545 CST) determine that a new document edition is required. At that point, all outstanding changes will be incorporated into a ratification draft for the next edition and this draft will be forwarded to participating nations for formal ratification.

Additions to this Errata Sheet will be cumulative. Additional changes will be added to this list until a revision to the STANAG is generated. Therefore, use of the latest list to supplement the STANAG is advised in developmental programs.

This document is identified by the Errata Sheet number and date. The following information is provided as reference to identify the baseline against which this document is to be applied.

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Document Name:		STANAG Number:	
	NATO Secondary Image Format Implementation Guide		AEDP-4
Edition Number:		Amendment Number:	
	Edition 1		NA
Errata Sheet Number:		Errata Sheet Date:	
	E-1		15 December 2008

Items in the change tables can be referenced back to the original Request For Change (RFC) through the following table. This table shows the RFC number along with the original title, subject, and the affected sections of the STANAG.

NSIF RFC Number	Title	Subject	Affected Sections
AEDP4-1	Chipping Images with BLOCKA TRE	This paragraph talks about procedures involved when using the BLOCKA TRE and when chipping images. The user has several options to choose from, this guidance helps make the options clear.	Annex A, Section A-20;
AEDP4-2	Utilization of SDE's	This section talks about the proper usage of SDE's that supply geodetic information.	Annex A, Section A-19;
Old sections A-19 through A-28 must be shifted by 2 digits			
AEDP4-3	New Commercial Data Extensions: Table	The Table on Page D-9 currently has only 4 of the commercial TREs. The list from STDI-0006 has 19 TREs and 2 DESs; even though some are referenced in either the Geospatial or Airborne Tables, all need to be referenced in the Commercial Table.	Annex D, Page D-9,
AEDP4-4	New Commercial Data Extensions: Summaries	In addition to the Table on Page D-9, the summaries list on Pages	
AEDP4-5	Correction of HIS to HSI on Airborne SDE Table	Due to MS Words Auto-correction instructions, the Acronym HSI is often changed to HIS. This occurs twice in the Airborne SDE Table.	Annex D, Page D-2
AEDP4-6	Adding of Carriage Return in SDE Summaries before PATCH Description	In the Summaries of the SDEs, the title for the PATCH TRE did not receive a carriage return and thus got stuck on the end of the summary for the MSTGT TRE.	Annex D, Page D-12 (as of before the addition of the new commercial summaries)

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Administrative Changes:

The following administrative changes will be incorporated into the next amendment or edition as appropriate.

The following changes were proposed at the 4545 CST meeting of 29-30 January 2002, as a result of the review, conducted by the U.S. Joint Interoperability Test Command (JITC), of the Complexity Level table in STANAG 4545, the ISO BIIF profile, and U.S. MIL-STD-2500B, CN2.

<i>RFC Number</i>	<i>Document Location</i>	<i>Current Text</i>	<i>New Text</i>
AEDP4-1	Annex A Section A-20	<i>None</i>	<i>See Line Below</i>
<u>Chipping Images with BLOCKA TRE</u>			
When A BLOCKA Image Source Is Chipped The User Can Either Recalculate The BLOCKA TRE Or Add An ICHIPB TRE Retaining The Original BLOCKA. If The User Is Processing A Product That Has An ICHIPB TRE, It Must Have The Original BLOCKA TRE. In This Case The IGEOLO And BLOCKA "Will Not Match". So A Processor Can Either Use The IGEOLO Or The BLOCKA If No ICHIPB TRE Is Present Or If An ICHIPB Is Present Use The IGEOLO Or Calculate The Corner Points Using The ICHIPB As It Relates To The Original Image Coordinates As Presented In The BLOCKA, But Not The BLOCKA Directly."			
AEDP4-2	Annex A Section A-19	<i>None</i>	<i>See Reference 1</i>
AEDP4-3	Annex D Page D-9,	<i>See Reference 2</i>	<i>See Reference 2</i>
AEDP4-4	Annex D Page D-10 (Start)	<i>See Reference 3</i>	<i>See Reference 3</i>
AEDP4-5	Annex D Page D-2 Airborne SDE Table	Column Headers: Tag, Title, SAR, EO, IR, MSI/HIS Tag: Bands Title MSI/HIS Parameters	Column Headers: Tag, Title, SAR, EO, IR, MSI/HSI Tag: Bands Title MSI/HSI Parameters
AEDP4-6	Annex D Page D-12 (as of before the addition of the new commercial summaries)	MSTGT MSTGT provides information from the collection actually correspond to the area contained in the image. Use of MSTGT is optional.PATCH PATCH provides.....	MSTGT MSTGT provides information from the collection actually correspond to the area contained in the image. Use of MSTGT is optional. PATCH PATCH provides.....

REFERENCES:

Reference 1: Annex A Section 19 (new)

Utilisation of SDE's for Geocoding

As mentioned in section 17 of this document, there exists a considerable number of SDE's to supply geodetic information.

The following table outlines the proper usage of these SDE's: If the capabilities at the production site are given, the figure may be read from left to right. Otherwise, read it from right to left to find out which instruments are necessary for the accomplishment of a certain task.

<i>Case</i>	<i>Capabilities at image production site or at platform</i>		<i>Instrument to provide geolocation information</i>	<i>Additional assumptions necessary</i>	<i>Product to be delivered</i>
1	Imagery can be rectified and appropriately resampled	to a lat / long system	GEOPS + GEOLO	no	Orthorectified image, orthophoto
2		to a cartographic grid (eg. UTM or MGRS) system	GEOPS + MAPLO + PRJPS	no	
3	Imagery can not be rectified / resampled, but sensor model can be computed	elevation model available	GEOPS + GRDPS + PRJPS ¹⁾ or GEOPS + REGPT ²⁾	no	Unambiguously georeferenced image
4		elevation model not available	RPC00	no	Georeferencable image ³⁾
5	Sensor model data is available and can be delivered, but sensor model cannot or intentionally shall not be computed during image production	this is equivalent to the situation, that full exterior and interior orientation of the sensor is known.	Appropriate SDE's can be found from the catalogue of Airborne SDE's (see below)	generally yes ⁴⁾	Georeferencable image ⁵⁾

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<i>Case</i>	<i>Capabilities at image production site or at platform</i>		<i>Instrument to provide geolocation information</i>	<i>Additional assumptions necessary</i>	<i>Product to be delivered</i>
6	Sensor model data is available only partly or with moderate accuracy	corner coordinates suffice	IGEOL + ICORDS fields of image subheader	no	Non-georeferencable image with geolocation information for corner pixels or for other points of interest
		other coordinates (e.g. image center or target location) shall be provided	Appropriate SDE's can be found from the catalogue of NSIF approved SDE's. ⁶⁾	no	

- 1) This combination is appropriate if a regularly spaced grid should be delivered with the image.
- 2) This combination is appropriate if a limited or irregularly spaced number of registration points should be delivered with the image.
- 3) The image can be precisely georeferenced if (and only if) an elevation model is available at the receiving site.
- 4) At present time, no SDE from the catalogue of the Airborne SDE's can carry the full interior orientation of an optical imaging sensor.
- 5) The image can be precisely georeferenced if the additional assumptions are known at the receiving site **and** an elevation model is available at the receiving site.
- 6) From these, GEOPS + SNSPS offer greatest flexibility.

In a large number of applications, the cases no. 5 and 6 characterize the situation at hand. These cases need further comments:

Case no. 5:

Here, the full interior and exterior sensor orientation must be transmitted within the NSIF file:

For a full interior orientation the following data are necessary:

- (1) Focal length
- (2) Pixel coordinates of the point where the optical axis intersects the pixel matrix (this is not necessarily the image center)
- (3) Geometric distortion characteristics of the lens system, at least its projection equation

And the exterior orientation comprises the following data:

- (4) Geodetic position of the projection center of the sensor ("sensor position")
- (5) Direction of the optical axis, usually given by three rotational angles within the local NED system
- (6) Sequence order of the rotational angles

The SENSR SDE can accommodate both for (4) and (5). (It supplies rotational angles both for the sensor and the platform to allow a two-step transformation from the sensor system into the NED system.)

The data for (1) can be accommodated for in the ACFTB or BANDSA SDE.

However, the data for (2) can be stored only in the MENSRB or MPDSRA SDE's (in the form of row and column numbers, and at the price of considerable overhead), and the data for (3) and (6) cannot be stored at all within the present inventory of NSIF SDE's.

In this respect, the situation for case no. 5 is that:

- one has to assume that the sensor is free of distortion (e.g. its projection strictly follows a tangent law, it is not in any way equidistant, orthographic, or similar.)
- one has to assume the image center (center of the pixel matrix of the image segment) is identical to the point, where the optical axis had intersected the focal plane. (unless one uses MENSRB or MPDSRA)
- one has to agree on a certain angle sequence order for the two transformations by which the optical vector is transformed into the local NED system.

Case no. 6:

The IGEOLO and ICORDS fields of the image subheader, as well as the numerically more precise BLOCKA SDE generally do not provide enough information for georeferencing. The sole existence of these data within an NSIF file does not justify any conclusion regarding the geometric properties or the rectification status of the pixel matrix.

Special points of interest, e.g. target coordinates may be given within various SDE's. Their possibilities are varying regarding accuracy, geodetic datum, coordinate system, and two- or three-dimensional coordinate representation.

The following SDE's provide such capabilities for specifying points or even regions of interest:

- ACFT
- AIMID
- BNDPL
- CMETA
- MENSR
- MPDSR
- MSTGT
- REGPT
- SNSPS
- STDID

Reference 2: Commercial SDEs Table

The Information starting at Commercial SDEs on page D-9 and ending at Miscellaneous SDEs should appear as shown below.

Commercial SDEs

The commercial extensions are intended for use with imagery produced by commercial sources of satellite imagery. These extensions provide for including ephemeris and sensor pointing information with each image. The specific extensions in the commercial SDEs are shown in the table below.

<i>SDE IDENTIFIER</i>	<i>SCOPE</i>
CSCCGA	Cloud Cover Grid Data
CSCRNA	Corner Footprints
CSDIDA	Dataset Identification
CSEPHA	Ephemeris Data
CSEXRA	Exploitation Reference Data
CSPROA	Processing Information
CSSFAA	Sensor Field Alignment Data
GEOLOB	Image, raster, or matrix data rectified consistently with geographic (lat/long) coordinate systems
GEOPSB	Geo-referencing parameters including datums, ellipsoids
HISTOA	Softcopy History
ICHIPB	Image Chip Information
J2KLRA	JPEG 2000 Support Data
MAPLOB	Image, raster, or matrix data rectified consistently with cartographic (E, N) coordinate systems
PIAIMC	Profile for Imagery Access
PRJPSB	Projection Parameters
RPC00B	Rapid Positioning Capability
STDIDC	Standard Identification
STREOB	Stereo Image Information
USE00A	Exploitation Usability
CSATTA DES	Attitude Data DES
CSSHPA DES	Shapefile DES

Reference 3: Commercial SDE Summary Additions

SDE Titles without summaries shown here are currently included in AEDP-4. Text shown in Italics needs to be added into the AEDP. TREs are listed alphabetically, DESs are listed by order of creation.

Tagged Record Extensions (TREs):

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ACCHZ
ACCPO
ACCVT
ACFT
BANDS
CMETA

CSCGA

The Cloud Cover Grid Data TRE (CSCCGA) provides support data that identifies which image segment and sensors were used to create the cloud grid. CSCCHA also geometrically registers the cloud grid to the pixel grid of one of the image segments.

CSCRN

The Corner Footprint TRE (CSCRNA) provides the geodetic latitude, longitude, and ground elevation at the four-corners of the sensor (sub-image) footprint (or MBR, if the footprint is of irregular shape).

CSDID

The Dataset Identification TRE (CSDIDA) provides basic information describing the data contained in the NITF file.

CSEPH

The Ephemeris Data TRE (CSEPHA) provides detailed space vehicle ephemeris information. The CSEPHA TRE provides global information for the entire NITF dataset. The CSEPHA can be repeated as necessary if the number of ephemeris vectors exceeds 999 in order to contain all ephemeris data. The minimum number of ephemeris vectors is 7, 3 during the pre-imaging interval, and 3 during the post-imaging interval. When the number of ephemeris vectors exceeds 999 the remaining vectors are recorded across multiple instances of the CSEPHA TRE in time-sequence order, and shall be treated as a set for the imaging interval. If multiple CSEPHA TREs are required, there could exist a case where only one ephemeris vector is present in the last CSEPHA TRE. Therefore the range for NUM_EPHEM must be 001 to 999.

CSEXR

The Exploitation Reference Data TRE (CSEXRA) provides exploitation support data -- acquisition, environment, and performance parameters. This TRE contains data about preprocessed imagery.

CSPRO

The Processing Information TRE (CSPROA) identifies processing options that were applied during image formation.

CSFAA

The Sensor Field Alignment Data TRE (CSSFAA) provides information on detectors, sensor type, and field alignment including fields for the focal length and principal point offset components. This TRE provides global information for the entire NITF dataset.

ENGRD
EXOFT
FACCB

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GEOLO
GEOPS
GRDPS
HISTO
ICHIP
J2KLR
MENSR/MPDSR
MSTGT
PATCH

PIAIM

This support extension is designed to provide an area to place fields not currently carried in NITF but are contained in the Standards Profile for Imagery Access (SPIA). Most imagery related information is contained in the NITF main headers and Support Data Extensions (SDEs). The purpose of this extension is to minimize redundant fields while providing space for all information. This extension shall be present no more than once for each image in the NITF file. When present, this extension shall be contained within the image extended subheader data field of the image subheader or within an overflow DES if there is insufficient room to place the entire extension within the image extended subheader data field. This extension may alternatively be placed in the file header, either the extended header or the user defined header locations, when the information it contains pertains to more than one image segment in the file.

REGPT
RPC00
SENSR
SNSPS
SOURC
STDID
STREO

Data Extension Segments (DESs):

Tagged Record Extension Overflow (TRE_OVERFLOW) DES
Streaming File Header (STREAMING_FILE_HEADER) DES
Ground Moving Target Indicator (GMTI) DES

Attitude Data (CSATTA) DES

The Attitude Data DES (CSATTA) provides sensor attitude information needed to run the rigorous math model to perform geolocation and mensuration. This DES provides global information for the entire NITF dataset. The Attitude Data DES (CSATTA) can be repeated as necessary if the number of attitude reference points exceeds 9999 in order to contain all attitude data.

Shapefile (CSSHPA) DES

The Shapefile DES (CSSHPA) is a general wrapper structure for an ESRI Shapefile

Technical Changes:

The following technical changes will be incorporated into the next edition.