STANDARDS RELATED DOCUMENT

AEDP-4607.1

NATO GROUND MOVING TARGET INDICATION FORMAT (GMTIF) - IMPLEMENTATION GUIDE

Edition A, Version 1

FEBRUARY 2024

NORTH ATLANTIC TREATY ORGANIZATION

Published by the
NATO STANDARDIZATION OFFICE (NSO)

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NORTH ATLANTIC TREATY ORGANIZATION (NATO)

NATO STANDARDIZATION OFFICE (NSO)

NATO LETTER OF PROMULGATION

16 February 2024

1. The enclosed Standards Related Document, AEDP-4607.1, Edition A, Version 1, NATO GROUND MOVING TARGET INDICATION FORMAT (GMTIF) - IMPLEMENTATION GUIDE, which has been approved in conjunction with AEDP-4607 by the nations in the NATO AIR FORCE ARMAMENTS GROUP (NAFAG), is promulgated herewith.

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Dimitrios SIGOULAKIS
Lieutenant General, GRC (A)
Director, NATO Standardization Office

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CHAPTER 1 INTRODUCTION

1.1. Aim

The aim of the NATO Ground Moving Target Indicator Format (GMTIF), STANAG 4607, is to promote interoperability for the exchange of ground moving target indicator radar data among North Atlantic Treaty Organisation (NATO) Intelligence, Surveillance, and Reconnaissance (ISR) Systems. Note that the STANAG 4607 format interprets the term “ground moving target indicator” to mean “targets on the surface of the earth, to include terrestrial, littoral, and deep water areas, stationary rotators, and targets flying close to the surface of the earth”.

The STANAG 4607 defines a standard for the data content, a format for the products of ground moving target indicator radar systems, and a recommended mechanism for relaying tasking requests to the radar sensor system from a ground station. This Allied Engineering Documentation Publication (AEDP) provides guidance for the implementation and testing of STANAG 4607, as well as the latest STANAG 4607 approved format.

1.2. GMTIF Philosophy

The NATO GMTIF STANAG 4607 format defines the data format for ground moving target indicator radar data, regardless of the level of sophistication of the radar system. Conformance with the NATO GMTIF does not in itself provide complete interoperability, since it defines only the presentation layer protocol (Layer 6) of the International Standards Organisation - Open Systems Interconnection model (ISO/IEC 7498-1), and other layers must be defined by additional specification. However, STANAG 4607 does provide data that can be interpreted by any compliant ground system. The format is scalable to all levels of capability. Small-scale systems can use only those elements of the format required to transmit their data, while more robust systems can use more aspects of the format to encode additional information.

To accomplish this scalability, the format uses two technical approaches. First, the format is divided into segments, with no predefined sequence other than the requirement to preface data segments with appropriate header segments, as defined in the STANAG 4607 format. Each system using the format is free to select the particular segments it requires for the data produced, with the exception of a few mandatory segments. Secondly, the data fields within the segments are identified as Mandatory, Conditional, or Optional. Mandatory fields are essential to the format and must always be sent when the segment is sent. Conditional fields are dependent on the presence or absence of other fields or segment or the value of certain other fields. Conditional fields are sent only if the established conditions are present. Optional fields are not required but may be transmitted if they are available and if they provide added value or utility and are not constrained by communications or operational considerations. With these approaches, some segments may be tailored to the data format and functional requirements of the particular system.

In addition to its use as a stand-alone format, the GMTI data can also be formatted in accordance with this standard and then encapsulated in either of the NATO image formats (the NATO Secondary or Primary Imagery Formats, STANAGs 4545 or 7023, respectively). This feature allows additional data, not included in this format, to be transmitted in conjunction with the GMTI data.

1.3. AEDP Scope

This document provides technical information developed during the production of the STANAG, including implementation guidance and amplifying information. This information is provided in the Annexes to this AEDP.

Annex A describes the NATO GMTIF background and employment concept, and provides the rationale for the selection of the elements of the interface. Annex B describes Options for Dissemination of GMTI Information Using NATO ISR STANAGs. Annex C discusses the Data Exploitation Classes. Annex D provides a discussion of issues associated with the transmission of STANAG 4607 data over communications channels. Annex E provides an overview of coordinate location systems and time standards. Annex F provides a set of Frequently Asked Questions (FAQs) pertaining to STANAG 4607.

Annex G includes the Test and Validation procedures for verifying that a product meets the requirements of STANAG 4607. Annex H includes the configuration management plan for managing the STANAG and associated documentation. Annex I provides a programming guide for the STANAG 4607 reference libraries. Annex J describes the procedures for adding additional capabilities to the STANAG. Annex K provides the terms and definitions used in the AEDP. Annex L is the Registry of Controlled Extensions for extensions which have been approved for use with STANAG 4607. Annex M lists the changes from version to version in STANAG 4607. Annex N lists the changes from version to version in this implementation guide.

ANNEX A Rationale and Employment Concept for GMTI Format

A.1 Introduction

The following describes the method for which the STANAG 4607 format was designed and its overall concept.

A.1.1 Background

The GMTI Format (GMTIF) originated as an initiative to develop a common format to support the dissemination of ground MTI data from US sensor platforms. It was developed by a working group originally consisting of representatives from US Government and Industry, which later grew to include Canada and the UK. Ultimately, NATO Air Group IV (AG IV, now the Joint Capability Group for ISR, JCGISR) recognized the need to define a standard for GMTI data and the NATO GMTI Technical Support Team (TST) was created. The GMTI TST was created under AG IV's Intelligence, Surveillance, and Reconnaissance Integration Working Group (ISRIWG), which is now designated as the Imagery Working Group (IMWG) of the JCGISR. With the promulgation of STANAG 4607, the Technical Support Team is now designated as the Custodial Support Team (CST).

This Data Format has evolved into a NATO standard that is capable of supporting the GMTI dissemination needs of the member nations. It can be used in conjunction with other ISR standards, such as STANAG 4545 and STANAG 7023, for the dissemination of complementary data.

A.1.2 GMTIF Structure

STANAG 4607, the NATO GMTI Format, is structured as a set of Message Segments, with each Message Segment designed to carry specific types of information. STANAG 4607 transmission is accomplished by means of packets, where each packet consists of a Packet Header and a number of Message Segments containing GMTI data pertinent to one radar job. If the amount of data exceeds the size limit of a GMTIF packet or the constraints of the transmission media, the format allows a portion of the data to be sent in one GMTIF packet and the remainder of the data to be sent in subsequent GMTIF packets.

A Segment Header, which defines the type of message and the length (in Bytes) of the following segment, precedes each Message Segment. Message Segments defined in Chapter 3 of the standard includes Mission, Dwell, High Range Resolution (HRR), Job Definition, Free Text, Test/Status, Processing History, and Platform Location. Dwell Segments may include Target Reports and the HRR Segment may include Scatterer Reports. The STANAG also includes "placeholders" for Group, Attached, LRI, and System-Specific Segments, but they are not implemented in the current version of the standard.

Chapter 4 of the STANAG includes two additional segments, Job Request and Job Acknowledge, which are used to request and acknowledge service by a radar sensor. The Segments in Chapter 4 are structured and used identically to those in Chapter 3.

GMTIF information is transmitted in a message-oriented manner, with the message lengths defined by the Segment Headers. There is no provision or need for Start- or End-of-Message characters to be transmitted. Multiple message segments of any type may be sent within the same packet. Figure A-1 illustrates the general structure of the GMTIF data packet, showing representative message segments. The structure is constrained by the packet assembly rules described for each segment type, as defined in Chapters 3 and 4 of the standard. Note that the figure illustrates a typical GMTI packet structure and is not to be construed as representing all possible combinations of segments within a packet.

The data format described herein allows for loss of packets but assumes that the packets received are error-free. It does not specify error detection/correction, encryption, or the physical transmission of the data. These functions must be accomplished by the lower layers of the communications media that transmit the data.

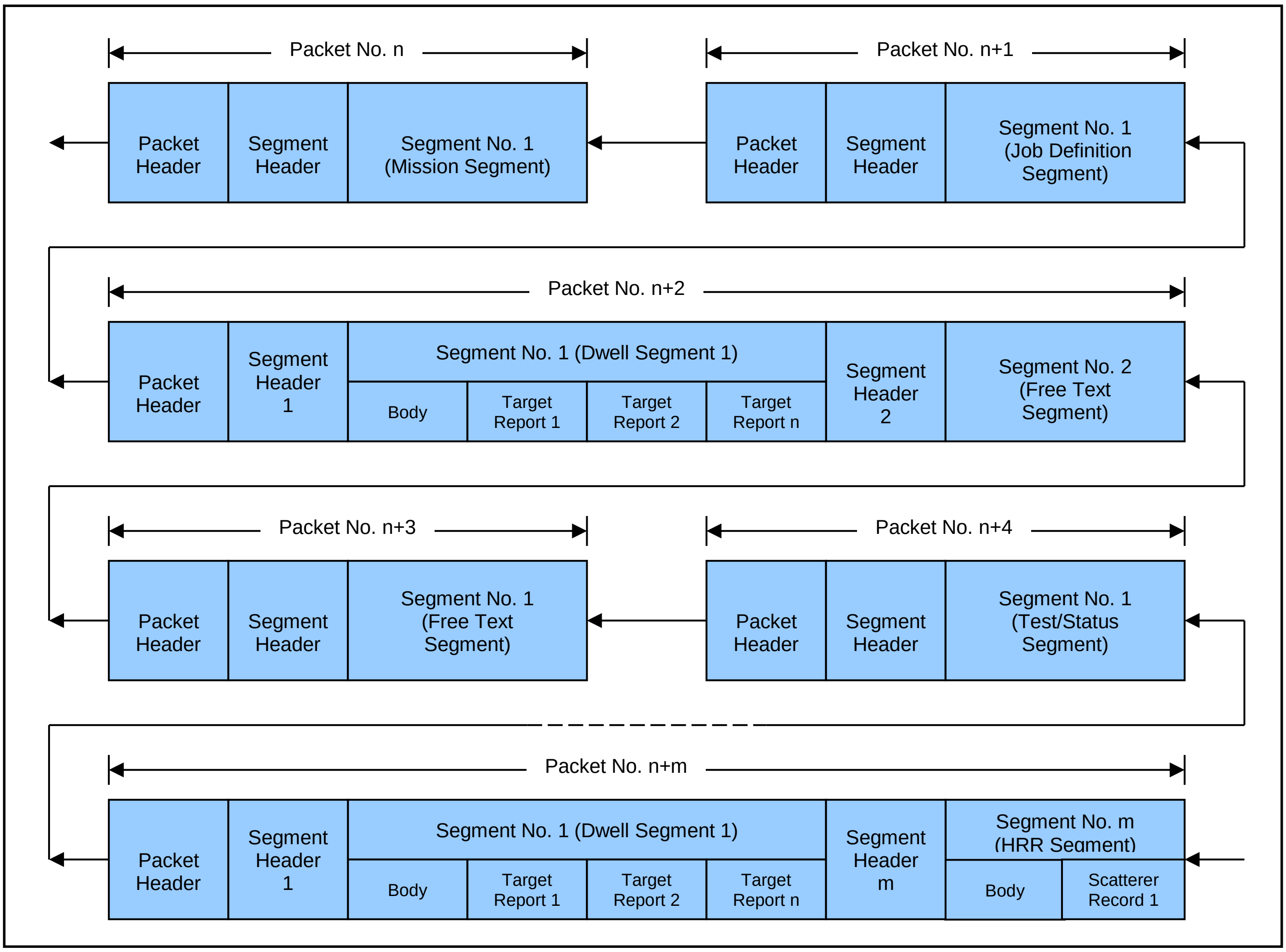

Figure A-1. Notional GMTI Format Structure

A.1.3 Rules for Transmission of STANAG 4607 Segments

The STANAG 4607 Packet Header is sent at the beginning of each packet. The Segment Header is sent prior to the beginning of each segment transmitted within a packet. The Mission Segment provides significant information concerning the mission, including the mission reference time. Although the Mission Segment is specified to be sent at least once every two minutes, it is preferable that it be sent more often (e.g., every thirty seconds), and ideally within each STANAG 4607 packet.

The Dwell Segment, which may include Target Reports, is transmitted for every packet in which the Job ID is non-zero (i.e., for every radar job specified in the packet header). It is sent whether or not any targets are observed during a given dwell. The HRR Segment corresponds to a specific Target Report in the Dwell Segment and is sent each time an HRR dwell is processed. The HRR Segment includes Scatterer Reports and additional data that can be used to create a Range-Doppler chip of the target.

The Job Definition Segment provides information pertaining to the radar job to be performed and is sent before the first revisit of a job and periodically at least once every thirty seconds thereafter. The Free Text and Test and Status Segments are sent as often as required. The Processing History Segment is sent at least once every three minutes. The Platform Location Segment is sent as required during periods in which the sensor is not collecting data, such as enroute to an orbit location or during a turn.

The Job Request Segment, if it is used, is sent as required. The Job Acknowledge Segment is sent once to acknowledge the status of a particular job request.

Extensions to STANAG 4607, as documented in the “Registry of Controlled Extensions for STANAG 4607”, Annex L of this implementation guide, are transmitted in accordance with the specified rule(s) for each extension.

A.2 Rationale for GMTI Format.

The GMTI Format (GMTIF) provides a format to be used by surveillance and reconnaissance systems that require the transmission of GMTI data from airborne and spaceborne sensor platforms to their ground stations, between airborne platforms, from ground-based sensor platforms to their ground stations, and between ground stations. It has been designed as a scalable format that can be used by itself or embedded in other formats such as the STANAG 4545 and STANAG 7023 NATO Secondary and Primary Imagery Formats or used with the STANAG 4559 NATO Standard Library Interface (NSILI). When used with those STANAGs, the GMTI Format could be used in conjunction with existing mechanisms to send data such as graphics or imagery in addition to GMTI data. Refer to Annex B of this document for a discussion of procedures for embedding the GMTI Format into STANAG 4545 and using it with STANAG 4559.

The GMTI Data Flow Diagram, Figure A-2, illustrates a notional diagram for the transmission of GMTI data from the Sensor System to the Exploitation System. It shows the general relationships between Raw Data, GMTI Data, and the points at which the GMTI Format could be applied. Note that the additional processing, if required, could be accomplished either on the airborne/spaceborne platform or within the corresponding ground station, depending on the system. For example, airborne platforms with exploitation capabilities can either transmit the GMTI data directly to its ground station or can exploit it directly on the platform.

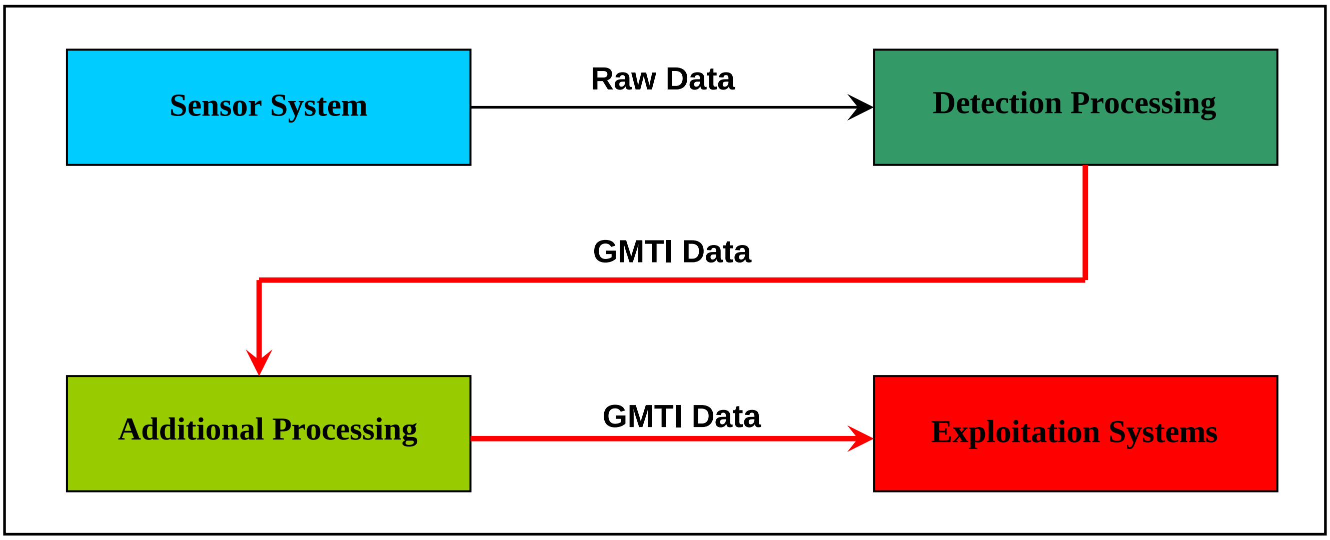

Figure A-2. GMTI Data Flow Diagram

The terms in Figure A-2 are defined as follows:

- Raw Data: The data available directly at the output of the sensor system. For radar systems, this is typically in the form of a digitized video signal, such as I and Q data, and is not suitable for transmission using the GMTI Format.
- Detection Processing: Processing performed on the Raw Data to prepare it for transmission in the GMTI Format, either within the platform or to a Ground Station via a Datalink.
- GMTI Data: Detection data that has been processed for transmission from the sensor platform or for use on-board the platform. It is in a form that allows workstation exploitation and is in the format defined in STANAG 4607. Detection data may include both Target Reports (also referred to as "dots") and HRR data.
- Additional Processing: Processing performed to recover the GMTI data from the Datalink or the additional processing performed on the GMTI data, such as simple geographical filtering, prior to sending the data to the Exploitation Systems. Note that this function is not required if the system sends the GMTI data directly to the Exploitation System.
- Exploitation Systems: Includes systems and capabilities such as trackers, situational awareness displays, evidence accumulators, automatic target recognition (ATR), fusion or correlation with other sensor data, and other systems that exploit GMTI data. Note that the GMTI Format is intended to provide the detections and the supporting information needed by those exploitation systems; it is not intended to provide a format for exploitation products.

A.3 Notional Employment Concept.

In the general case, a sensor platform (which may be airborne or spaceborne) will be deployed to a specific theater of operations and assigned a flight path or orbit to perform its surveillance/reconnaissance mission. The platform will typically be connected via a datalink to its ground station (possibly through a satellite or relay link), which will be capable of receiving GMTI-formatted data from the sensor. The ground station may also be capable of providing requests for sensor service to the platform, possibly through a separate data link such as Link 16 (STANAG 5516). The following paragraphs describe two notional systems and illustrate how the GMTI Format could be used for the dissemination of GMTI data and sensor request messages between ground stations and airborne or spaceborne platforms. The specific examples are for systems that include airborne exploitation capability and for systems that do not include that capability.

A.3.1 System With Airborne Exploitation.

As described above, systems with airborne exploitation have the capability to either transmit the pre-processed data directly to its ground station or to process the radar data and exploit it on the platform. Figure A-3 illustrates a notional connectivity diagram for a system with airborne exploitation and shows the points in the data chain at which the GMTI Format could be employed. Referring to the figure, the “raw" radar data received by the Airborne Sensor is sent to the Airborne Pre-Processing function, which provides formatting of the raw data (e.g., I and Q data) into radar detection data (also known as “dots”) and/or High-Range Resolution (HRR) data. This data can be either transmitted to the ground station via an appropriate datalink or sent directly to on-board processing and exploitation functions. The figure shows separate locations for the Ground Station and the Exploitation System but the two functions could actually be collocated. The GMTI Format is capable of carrying other information such as free text and test/status information in addition to the MTI and/or HRR data, as shown in the figure.

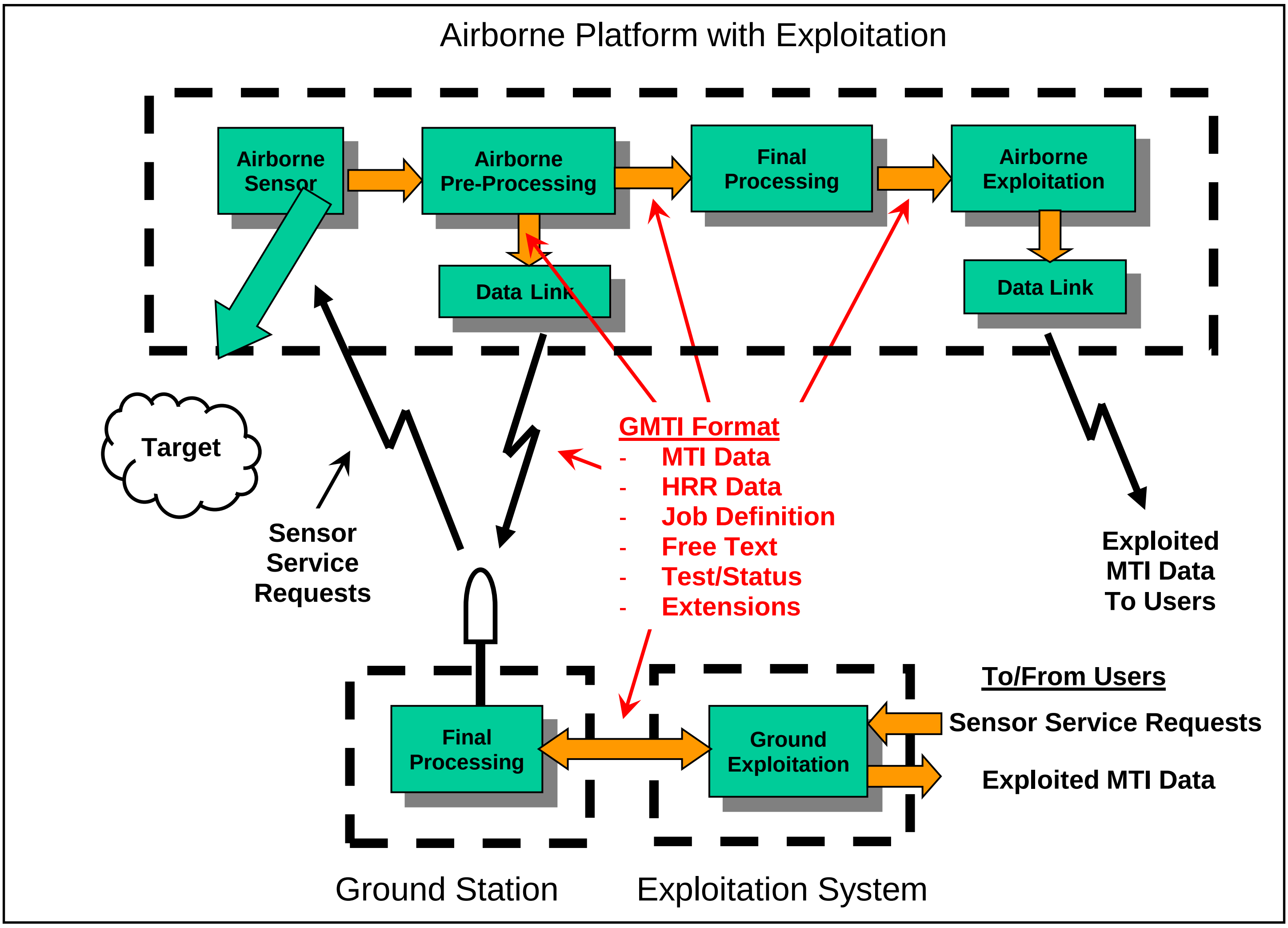

Figure A-3. Notional Connectivity, System with Airborne Exploitation

The connectivity diagram shown in Figure A-3 includes an uplink for Sensor Service Requests. This link provides a means of requesting sensor service of particular surveillance areas. In practice, radar service may be requested by either on-board operators or ground station operators, or it may be sent to the ground station from other sources. The radar manager is responsible for either honoring the service request or providing a rationale as to why it cannot be honored (e.g., out of orbit, out of range, low priority, etc.). The general sequence of events for an on-board request is as follows:

- The on-board requestor provides a request for specific radar service (i.e., radar mode, revisit rate, time of requested service, etc.) within a given geographic area;
- The radar manager provides an acknowledgment of the request, either rejecting the request or accepting it and assigning a job identification number;
- The radar system performs the requested surveillance and provides MTI data to the on-board exploitation system, typically to the operator requesting the service;

- The exploiter (typically the requestor) receives the MTI data, exploits it as required, and provides it via a downlink to a user; and
- The user receives the exploited MTI data and provides appropriate reports to the area commander who requires the information.

The general sequence of events for a ground station request is as follows:

- The requestor provides a request for specific radar service (i.e., radar mode, revisit rate, time of requested service, etc.) within a given geographic area;
- The radar manager provides an acknowledgment of the request, either rejecting the request or accepting it and assigning a job identification number;
- The radar system performs the requested surveillance and provides pre-processed data for transmission to the requesting ground station;
- The ground station receives the data, provides any necessary final processing, and provides it to the exploitation system; and
- The exploitation system exploits the received MTI data and provides appropriate reports to the area commander who requires the information.

Note that the GMTI Format does not specify the transmission characteristics for either the MTI data downlink or the requesting uplink. It provides a required format for the downlink MTI data and a set of recommended guidelines of the minimum information required for the requesting uplink. In practice, uplink requests for radar service could be provided by a data link between the requestor and the providing platform, using the message formats recommended in STANAG 4607. MTI detections (“dots” or HRR) would be sent over a downlink via an appropriate communication channel, using the required GMTI formats.

A.3.2 System Without Airborne Exploitation.

Figure A-4 illustrates the notional connectivity to a system in which the final processing and exploitation is accomplished only within the ground station and the associated exploitation system. The example is for an airborne platform but it could also be extended to cover spaceborne platforms. The figure shows separate locations for the Ground Station and the Exploitation System but, in reality, the two could be collocated. GMTIF data carried between the two locations could be in STANAG 4607 native binary format, or in a suitable format such as eXtensible Markup Language (XML). In that case, the conversion between binary and XML versions would be accomplished in the Ground Station. In this example, “pre-processed” data is transmitted from the airborne platform to the ground station, which provides the reception, final processing, and dissemination to the exploitation system. The figure shows the points in the data chain at which the GMTI Format could be employed. It also shows a separate data link for Command and Control (C2) of the platform.

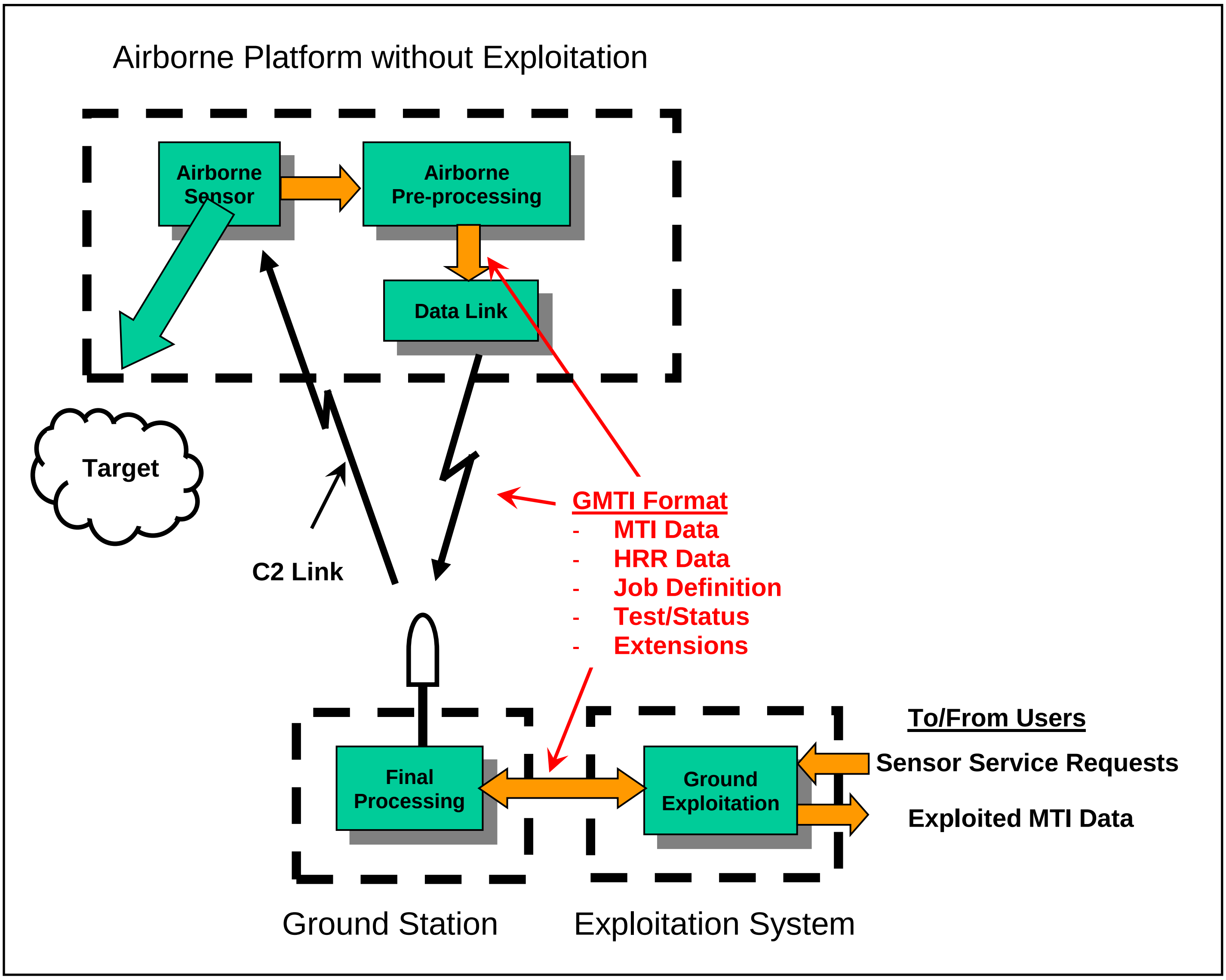

Figure A-4. Notional Connectivity, System without Airborne Exploitation

The general sequence of events for a mission controlled by a ground station operator, such as that for a UAV or a spaceborne platform, is as follows:

- The ground station operator provides remote control of the flight path, operating orbit, and sensor operation for the platform;
- A requestor at the exploitation system or other remote location provides a request for specific radar service (i.e., radar mode, revisit rate, time of requested service, etc.) within a given geographic area;
- The radar manager for the airborne (or spaceborne) platform provides an acknowledgment of the request, either rejecting the request or accepting it and assigning a job identification number;

- The radar system performs the commanded surveillance and provides pre-processed data for transmission to the ground station;
- The ground station receives the data, provides any necessary final processing, and provides it to the exploitation system; and
- The exploitation system exploits the received MTI data and provides appropriate reports to the area commander requiring the information.

The sequence of events for a request from an exploitation system is similar to that described above for a ground station request. The sequence of events for an autonomous (i.e., pre-programmed) mission is also similar, except that the airborne platform flies automatically and the ground station operator will not control its flight path or surveillance mode.

A.4 Conclusion.

This Annex describes a notional concept for employment of the GMTI Format, and uses two representative types of sensor platform to illustrate its application. The employment concepts described should be used as guidelines in developing detailed Concepts of Operation (CONOPS) for applying the GMTI Format to other systems for specific scenarios (e.g., Peace, Crisis, and War).

Note that the GMTI Format is not tailored to any specific communications system. Communications systems requirements must be tailored to each system on a case-by-case basis. Some key parameters to be considered are as follows:

- Robustness of the communications link (e.g., level of error protection and correction, resistance to jamming, etc.);
- Bandwidth requirements (e.g., using the GMTI Format direct, using the GMTI Format embedded in STANAG 4545 or 7023, etc.);
- Communications link restrictions (e.g., packet size limitations when using UDP, etc.);
- Link margins (e.g., transmitter power, receiver sensitivities, link losses, co-channel interference, etc.); and
- Communications latencies (e.g., processing time during transmission and reception, satellite link delays, etc.).

Annex D of this document provides additional considerations of communications issues.

ANNEX B Options for Dissemination of GMTI Information Using NATO ISR STANAGs

B.1 Introduction.

The GMTI Format described in STANAG 4607 can be embedded and transported within other ISR formats, such as the NATO Secondary Imagery Format (STANAG 4545) or the NATO Primary Imagery Format (STANAG 7023). GMTI information can also be disseminated through the NATO Standard ISR Library Interface (STANAG 4559). This Annex describes notional ideas of techniques for embedding the GMTI Format into STANAG 4545 and for dissemination of GMTI data through STANAG 4559 libraries.

B.2 Embedding the GMTI Format into STANAG 4545.

The recommended method for encapsulating the GMTI Format into a STANAG 4545 NATO Secondary Imagery Format (NSIF) data file is to reference the GMTIF as an NSIF Data Extension Segment (DES). The NSIF structure, shown in general form in Figure B-1, consists of a File Header and a number of Data Segments, including optional Data Extension Segments (DESs). Within the NSIF structure, the number and the type of data segments depends on the data to be transmitted, which may include imagery, graphics, text, or system-specific information, as defined in the appropriate DES. Each data segment includes a sub-header. The file header and the segment sub-headers specify profile and structural information that allows proper interpretation of the associated data. Headers, sub-headers, and data segments in STANAG 4545 (including DES subheaders and data) are structured in accordance with the strict guidelines of the NSIF, and must be registered and approved by the NSIF Custodian. The GMTIF DES has been appropriately registered and approved. This concept for encapsulating the GMTI Format into the NSIF is based on the latest version of STANAG 4545. STANAG 4545, however, is currently in transition and will be superseded by an NSIF Profile to the Basic Image Interchange Format (BIFF), an International Standards Organization (ISO) document which specifies a file format that is suitable for the interchange, storage, and retrieval of map and imagery information. STANAG 4545 will be reduced to a “pointer document” to the BIFF. The NSIF Profile to the BIFF will be the standard for formatting digital imagery files and imagery-related products and exchanging them with the user community, and will form the compliance document of STANAG 4545. For purposes of this discussion, “STANAG 4545” and the “NSIF Profile to the BIFF” are considered synonymous and could be used interchangeably.

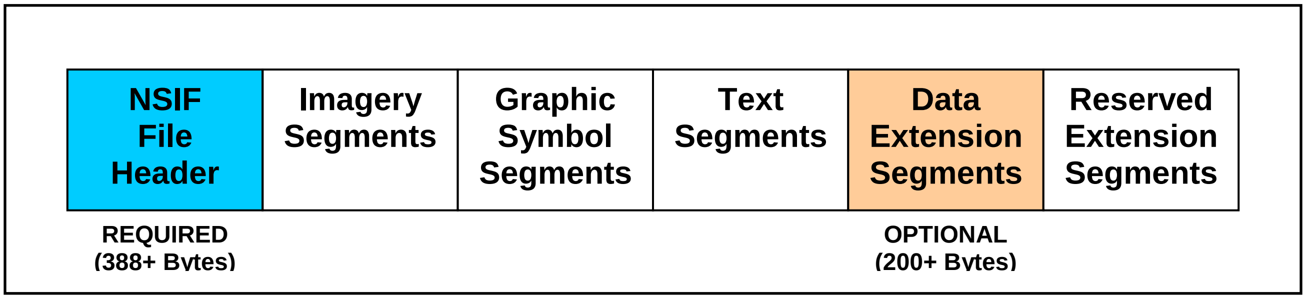

Figure B-1. Notional NSIF File Structure

The structure of the Data Extension Segment (DES) provides a means to include user-defined data in the NSIF format. For purposes of this document, the GMTI Format is defined as a DES and included in the NSIF file as required. The size limit of a DES is approximately 1 GByte. GMTIF Data to be embedded in the NSIF will be as defined in STANAG 4607, and referenced from the NSIF as a stand-alone data set. Note that the terms “Segment” and “Extension” in this section are those used in the STANAG 4545/NSIF Profile and are not to be confused with similar terms in this document for adding new capabilities to the STANAG, as described in Annex J of this document.

Figure B-2 illustrates how the GMTI Format (GMTIF) could be encapsulated into an NSIF file. Figure B-2 (a) shows a file in which the GMTIF is sent as a DES extension and Figure B-2 (b) shows a file in which a SAR Imagery Segment is sent along with the GMTIF DES segment. The GMTIF headers and segments are detailed in Annex B of this document and may be sent in any required combination when they are embedded in STANAG 4545. However, as a minimum, the Packet Header, Mission Segment, Job Definition Segment, Dwell Segment, and Segment Headers (before each segment) must be sent in accordance with the transmission rules for those headers and segments, as defined in the STANAG.

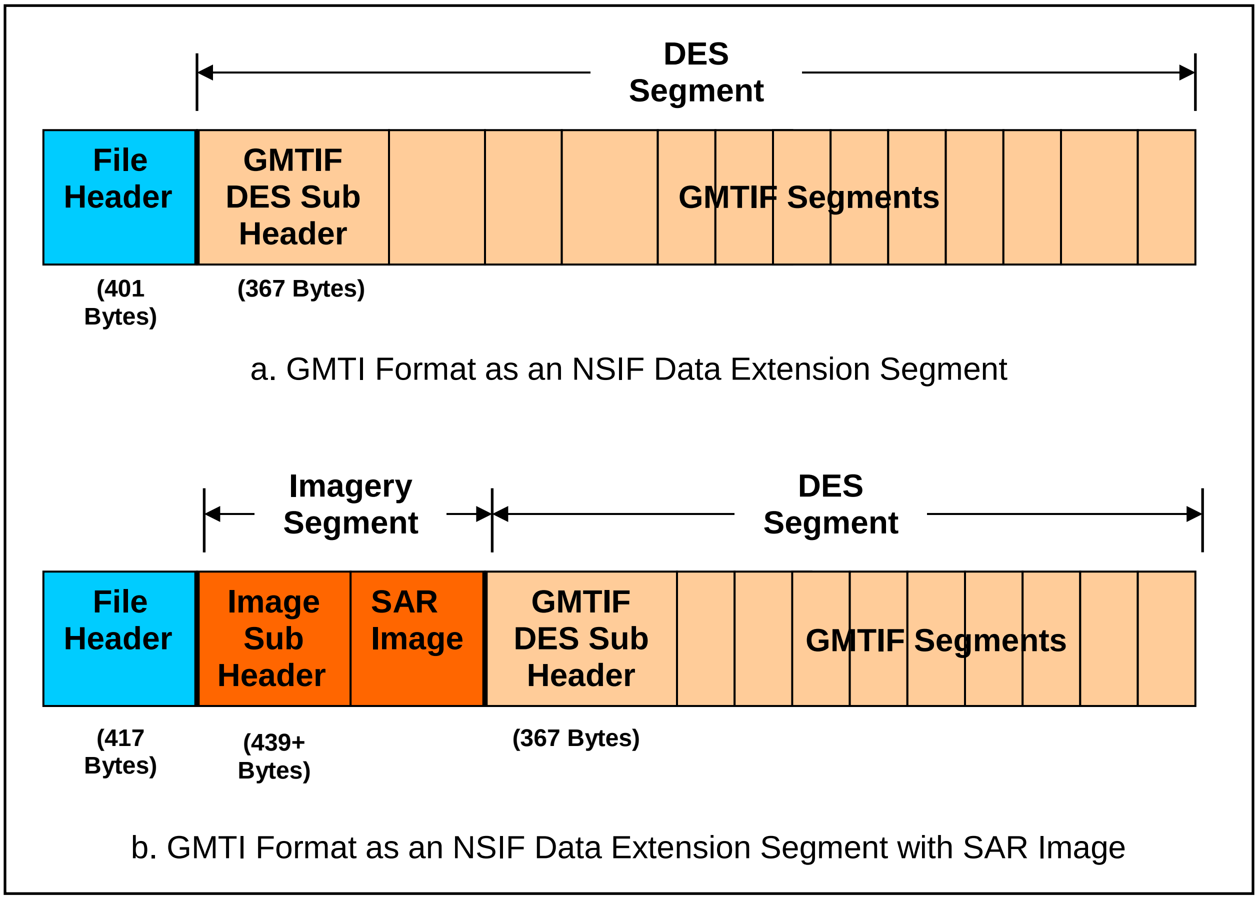

Figure B-2. GMTI Format Embedded in an NSIF File

Table G-14 shows the format for the proposed GMTIF DES Subheader. The format is derived from the NSIF-specified header format specified in Table C-1-8 of STANAG 4545, and includes the information required to adequately specify the DES. The entries in the "Char Size" column specify the type ("A" or "N") and the number of characters in each field. "A" is the Alphanumeric format defined in the BCS-A Character Set in Annex B to this document, and includes the allowable characters of Space to Tilde (codes 0x20 to 0x7E). "N" is the Numeric format, a subset of the BCS Character Set column shown in the referenced, and includes the allowable characters of Digits Zero to Nine (codes 0x30 to 0x39) plus the following:

Solidus (Slant Bar)	code 0x2F
Plus Sign	code 0x2B
Hyphen-Minus	code 0x2D
Full Stop (Decimal Point)	code 0x2E

In the "Value Range" column, the values in the MTI_START_DAY_TIME and MTI_END_DAY_TIME fields for the format "YYYYMMDDhhmmss" are taken from fields M5 through M7, Reference Time Year, Month, and Day, of the Mission Segment, and field D6, Dwell Time (rounded to a one second resolution), of the Dwell Segment. All values are expressed as BCS-encoded numbers (digits 0 through 9), where the BCS character set is a subset of the ECS character set. For the PT_A_LOC to PT_D_LOC fields, the format "±dd.dddddd" indicates degrees of latitude (where North is positive) and "±ddd.dddddd" represents degrees of longitude (where East is positive). The latitude and longitude values for these fields are taken from fields J6 through J13, Pt A Latitude and Pt A Longitude through Pt D Latitude and Pt D Longitude, in the Job Definition Segment.

Note that all GMTIF data within a DES segment must share the same values for nationality, platform ID, sensor type, mission ID, mission plan, flight plan, platform type, platform configuration, radar mode, revisit interval, and bounding area. This will likely, but not necessarily, imply that it comes from a single radar job.

Multiple GMTIF data extension segments may be included in an NSIF file, as indicated by the NUMDES, Number of Data Extension Segments, field of the NSIF File Header (Table C-1-1 of STANAG 4545). When multiple GMTIF data extension segments are included (i.e., when NUMDES is a non-zero value), fields LDSHn and LDn will be included in the NSIF File Header. The value of LDSHn for each GMTIF data extension segment will be equal to the number of Bytes in the GMTI Format Data Extension Segment Subheader, Table G-14 of this document. The value of LDn for each GMTIF data extension segment is computed from the Packet Size, field P2, of the Packet Header for each GMTIF Packet. (NOTE: refer to STANAG 4545 for definitions of the Field Names shown in Table G-14.)

The GMTIF DES Subheader and the segment data tables must be approved and accepted by the NSIF Custodian and under configuration management before they can be implemented in the NSIF. Data entered in the subheader will be in accordance with the details specified in the latest version of STANAG 4545.

B.3 Disseminating GMTI Information Through STANAG 4559 Libraries.

STANAG 4559, the NATO Standard ISR Library Interface (NSILI), provides a standard for accessing ISR libraries, reconnaissance databases, and product libraries of participating nations. It defines an interoperable interface to each participating Nation's ISR library system, without altering the internal architecture of any individual system. The basic concept of NSILI is for the nations to place their ISR products on their own National server, and to make those products available through the standard interface defined in STANAG 4559 to applications or users requiring that information.

The NSIL Interface is intended for multiple types of ISR products, and hence can be applied for storage and retrieval of Ground MTI data that is disseminated using the GMTI Format, STANAG 4607. It is important to note the criticality of delivery latency of GMTI data for applications such as targeting, where the GMTI is time-sensitive to the user. For such applications, dissemination of GMTI through STANAG 4559 libraries might not be appropriate. Other GMTI functions, such as the historical replay of moving targets to locate assembly areas, are applications which could make good use of GMTI information retrieved through the NSIL Interface.

Figure B-3 illustrates a notional connectivity diagram between an MTI sensor platform, National ground stations and servers, and user interfaces. The diagram assumes that the MTI data from the platform is transmitted in the GMTI Format to its ground station and server. Each server is responsible for receiving the incoming MTI data, storing it, and making it available to the users as STANAG 4607 data via the NSIL Interfaces and the Communications Network. The key point is that the servers, the networks, and the user applications must conform to the STANAG 4559 interoperable interface requirements.

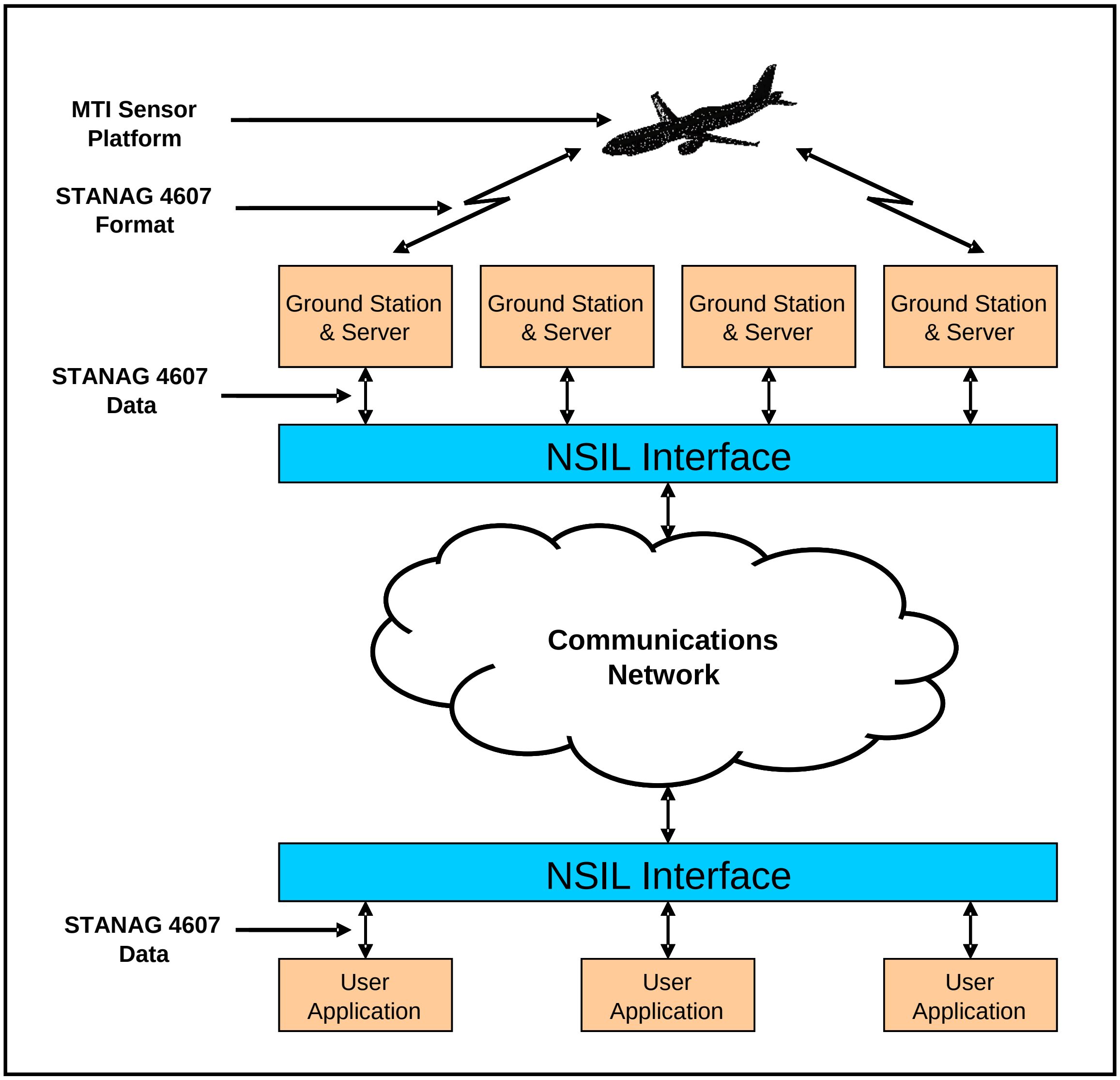

Figure B-3. Notional Connectivity Diagram for GMTI/NSIL Interface

Figure B-4 (adapted from STANAG 4559) illustrates additional details of the STANAG 4559 NSIL Interface. The diagram illustrates the NSILI functions for cataloging, managing, querying, and accessing data, and assumes that ISR data in the appropriate formats has been received and stored in the National library data stores, as shown in the figure above. The diagram assumes Library access via a Communications Network, which may be either a Wide Area Network (WAN) for remote access or a Local Area Network (LAN) for a local user. Data stored within the library function will include the actual data (in STANAG 4607 format for GMTI, in STANAG 4545 format for still Imagery, in STANAG 4609 format for Motion Imagery, etc.), and the associated metadata which provides a means for querying and retrieving the data. Note that the Users, the NSIL Client Applications, and the Internal

Library Software and Data Storage functions are out of the scope of the STANAG 4559 NSILI and are the responsibility of National users and implementing organizations; the NSILI only provides the standardized interfaces to those functions.

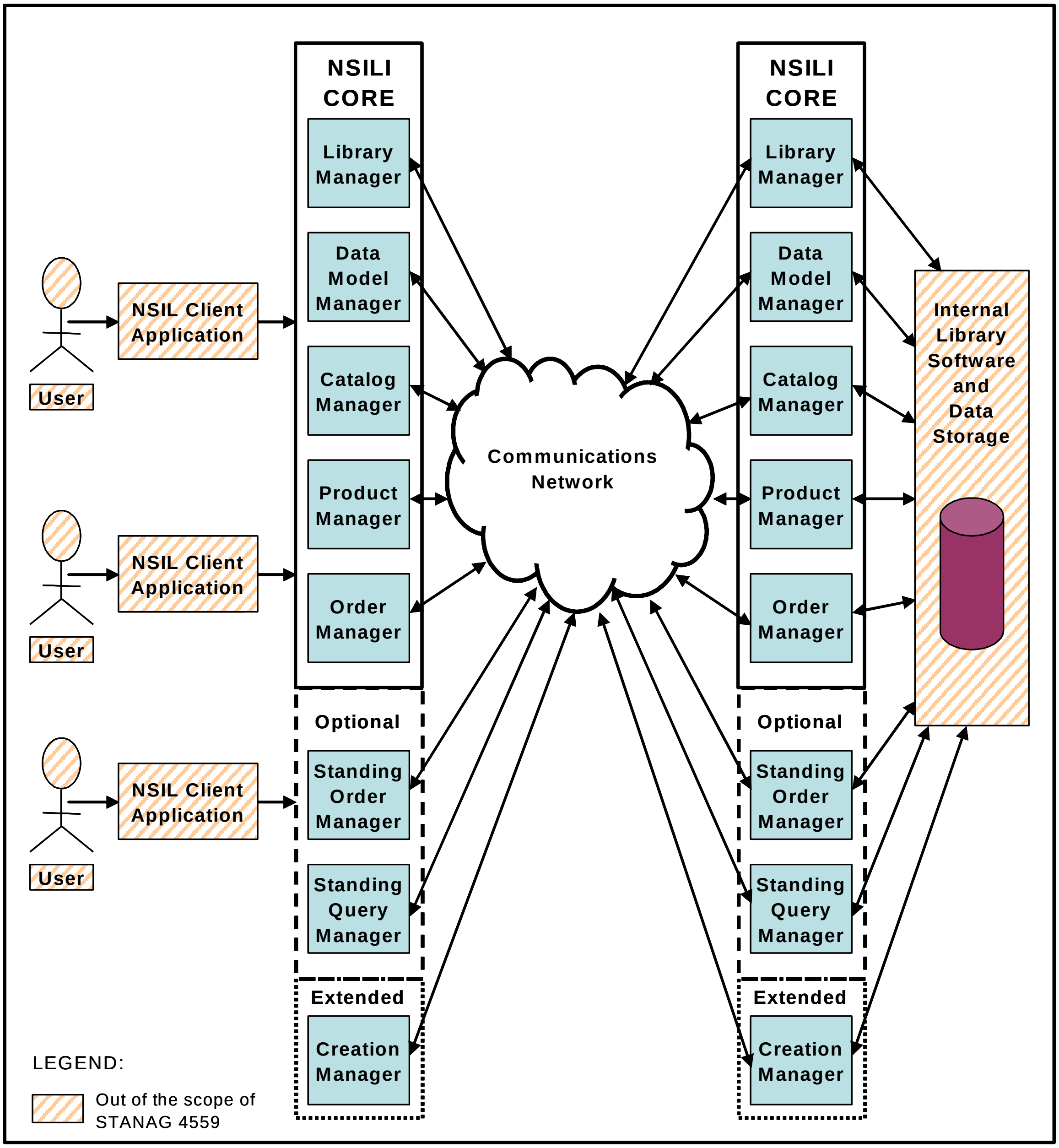

Figure B-4. NATO Standard ISR Library Interface (NSILI) Architecture Overview

The NSIL Client Application provides the user interface between a library and NATO users, and allows the client to use input from the user to discover a library server, search the library holdings of the discovered servers discovered, order products, and have digital data transmitted to the user. Figure B-5 (also adapted from STANAG 4559) illustrates the process for a user to query the library and request delivery of a product or set of products. The Order Process is one of several processes defined in STANAG 4559 and is included here as an illustration of a representative NSILI process as it could apply to the request of STANAG 4607 data. The diagram illustrates the process for a user client to query the data base in the ISR library, retrieve the desired data, and store it locally for further exploitation and/or display.

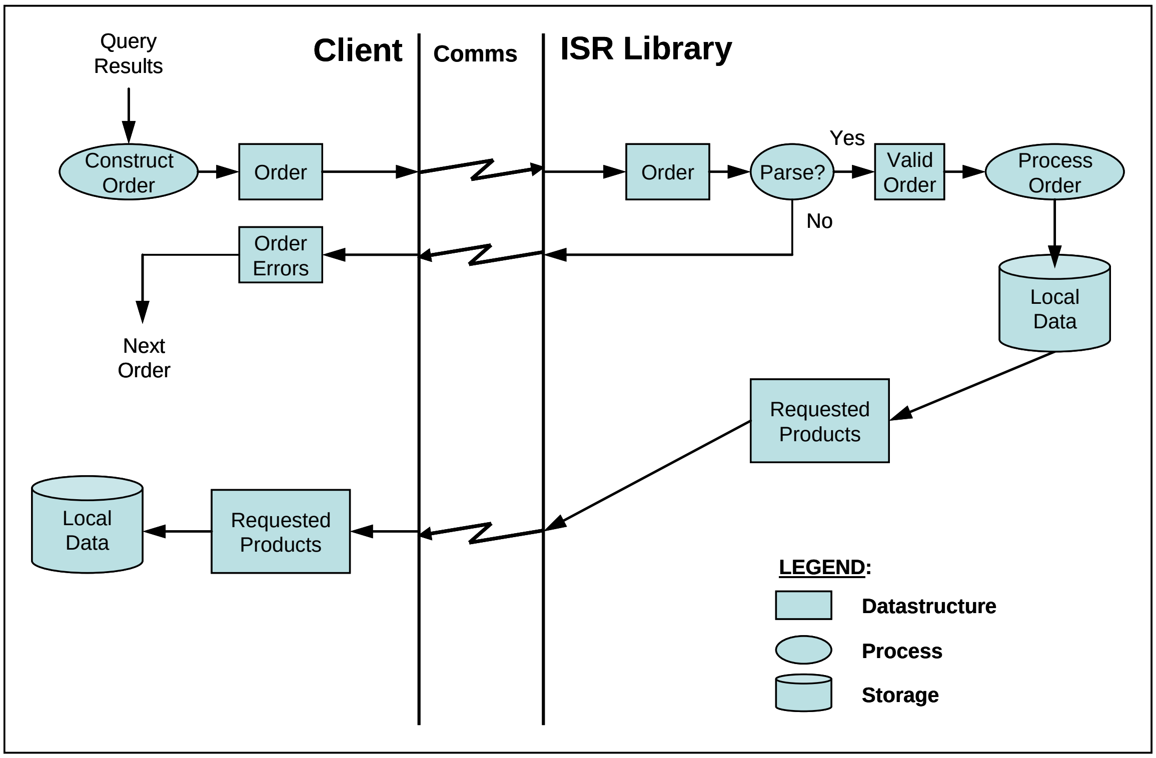

Figure B-5. NATO Standard ISR Library Interface (NSILI) Order Process

Refer to the latest version of STANAG 4559 for additional information.

ANNEX C Data Exploitation Classes

C.1 Introduction

This annex describes a set of Data Exploitation Classes that define a minimum set of Ground Moving Target Indicator Format (GMTIF) Data Fields for specific types of information exchange. Exploitation Classes guide the developer in choosing specific segments and data fields to exchange data for specific applications, where each application or category is characterized by the need to exchange more or less precise data to support its intended function. All data fields referenced in this Annex are defined in Chapter 3 of the standard or in Annex L of this document.

C.2 Definitions of Exploitation Classes.

The following Exploitation Classes are defined for STANAG 4607:

- **Situation Awareness (SA):** The minimum data required for Moving Target Indicator (MTI) target display.
- **Targeting and Tracking (TT):** The minimum data required for targeting and tracking of MTI targets using current or advanced automatic tracking algorithms or precision location systems.
- **Targeting and Tracking with High Range Resolution (HT):** The minimum data required for targeting and tracking of MTI targets using current or advanced automatic tracking algorithms or precision location systems and High Range Resolution/Range-Doppler (HRR/R-D) analysis of associated MTI targets

The tables in the following sections list the minimum set of data fields in STANAG 4607 Dwell and HRR Segments (including Target Reports and Scatterer Records) and the estimated packet sizes to be implemented for each exploitation class. Each Exploitation Class Data Field table is followed by a table that summarizes packet sizes for various numbers of targets (1, 42, 100, and 1000) when Dwell and HRR segments are combined with Packet and Segment Headers to create valid packets in accordance with STANAG 4607 conventions. Note that these tables include *only* the segments and headers required to transmit target information. They do *not* include other Data Segments defined in STANAG 4607 (e.g., Mission, Job Definition, Free Text, Test and Status).

C.3 Situation Awareness Exploitation Class.

Table C-1 lists the minimum set of Dwell Segment and Target Report data fields for the Situation Awareness Exploitation Class. The data field names, references, and sizes are taken from the Header and Segment Description tables in Chapter 3 of the standard.

Table C-1. Data Fields for Situation Awareness

EXPL. CLASS	SEGMENT	FIELD NAME	FIELD REF.	SIZE (Bytes)	
Situation Awareness	Dwell Segment (Body)	Existence Mask	D1	8	
		Revisit Index	D2	2	
		Dwell Index	D3	2	
		Last Dwell of Revisit	D4	1	
		Target Report Count	D5	2	
		Dwell Time	D6	4	
		Sensor Position Latitude	D7	4	
		Sensor Position Longitude	D8	4	
		Sensor Position Altitude	D9	4	
		Scale Factor Latitude	D10	4	
		Scale Factor Longitude	D11	4	
		Sensor Track	D15	2	
		Sensor Speed	D16	4	
		Sensor Vertical Velocity	D17	1	
		Platform Orientation Heading	D21	2	
		Platform Orientation Pitch	D22	2	
		Platform Orientation Roll	D23	2	
		Dwell Area	D24-D27	12	(64, total)
	Target Report*	MTI Report Index*	D32.1	2	
		Target Location Delta Latitude*	D32.4	2	
		Target Location Delta Longitude *	D32.5	2	(6, total)

Dwell Segment Existence Mask: 0xFF C7 1F C2 60 00 00 00

(*NOTE: Target Report data fields are repeated
for each additional reported target.)

C.3.1 Table C-2 illustrates the packet size when the Dwell Segment (including Target Reports) is combined with the Packet Header and Segment Header to create a valid STANAG 4607 packet. The table illustrates the packet sizes (in Bytes) to support the Situation Awareness Exploitation Class for representative target counts of 1, 42, 100, and 1000.

Table C-2. Packet Sizes for Situation Awareness

SEGMENT NAME	PACKET SIZE (NO. OF TARGETS)			
	(1)	(42)	(100)	(1000)
Packet Header	32	32	32	32
Segment Header	5	5	5	5
Dwell Segment - Body	64	64	64	64
Dwell Segment - Target Report(s)	6	252	600	6000
TOTAL:	*107*	*353*	*701*	*6101*

C.4 Targeting and Tracking Exploitation Class.

Table C-3 lists the minimum set of Dwell Segment and Target Report data fields for the Targeting and Tracking Exploitation Class.

Table C-3. Data Fields for Targeting and Tracking

EXPL. CLASS	SEGMENT	FIELD NAME	FIELD REF.	SIZE (Bytes)	
Targeting and Tracking	Dwell Segment (Body)	Existence Mask	D1	8	
		Revisit Index	D2	2	
		Dwell Index	D3	2	
		Last Dwell of Revisit	D4	1	
		Target Report Count	D5	2	
		Dwell Time	D6	4	
		Sensor Position Latitude	D7	4	
		Sensor Position Longitude	D8	4	
		Sensor Position Altitude	D9	4	
		Sensor Track	D15	2	
		Sensor Speed	D16	4	
		Sensor Vertical Velocity	D17	1	
		Platform Orientation Heading	D21	2	
		Platform Orientation Pitch	D22	2	
		Platform Orientation Roll	D23	2	
		Dwell Area	D24-D27	12	
		Sensor Orientation	D28-D30	6	(62, total)
	Target Report*	MTI Report Index*	D32.1	2	
		Target Location Hi-Res Latitude*	D32.2	4	
		Target Location Hi-Res Longitude *	D32.3	4	
		Target Location Geodetic Height*	D32.6	2	
		Target Velocity LOS Component*	D32.7	2	
		Target Wrap Velocity*	D32.8	2	
		Target SNR*	D32.9	1	
		Target Classification*	D32.10	1	
		Target Class. Probability*	D32.11	1	(19, total)

Dwell Segment Existence Mask: 0xFF C7 1F FA 7F 80 00 00

(*NOTE: Target Report data fields are repeated for each additional reported target.)

C.4.1 Table C-4 illustrates the packet sizes (in Bytes) to support the Targeting and Tracking Exploitation Class for representative target counts of 1, 42, 100, and 1000.

Table C-4. Packet Sizes for Targeting and Tracking

SEGMENT NAME	PACKET SIZE (NO. OF TARGETS)			
	(1)	(42)	(100)	(1000)
Packet Header	32	32	32	32
Segment Header	5	5	5	5
Dwell Segment - Body	62	62	62	62
Dwell Segment - Target Report(s)	19	798	1900	19000
TOTAL:	118	897	1999	19099

C.5 Targeting and Tracking with HRR Exploitation Class.

C.5.1 Table C-5 lists the minimum set of Dwell Segment, Target Report, HRR Segment, and Scatterer Record data fields for the Targeting and Tracking with HRR Exploitation Class.

Table C-5. Data Fields for Targeting and Tracking with HRR

EXPL. CLASS	SEGMENT	FIELD NAME	FIELD REF.	SIZE (Bytes)	
Targeting and Tracking with High Range Resolution	Dwell Segment (Body)	Existence Mask	D1	8	
		Revisit Index	D2	2	
		Dwell Index	D3	2	
		Last Dwell of Revisit	D4	1	
		Target Report Count	D5	2	
		Dwell Time	D6	4	
		Sensor Position Latitude	D7	4	
		Sensor Position Longitude	D8	4	
		Sensor Position Altitude	D9	4	
		Sensor Track	D15	2	
		Sensor Speed	D16	4	
		Sensor Vertical Velocity	D17	1	
		Platform Orientation Heading	D21	2	
		Platform Orientation Pitch	D22	2	
		Platform Orientation Roll	D23	2	
		Dwell Area	D24-D27	12	
		Sensor Orientation	D28-D30	6	62, total)
	Target Report*	MTI Report Index*	D32.1	2	
		Target Location Hi-Res Latitude*	D32.2	4	
		Target Location Hi-Res Longitude *	D32.3	4	
		Target Location Geodetic Height*	D32.6	2	
		Target Velocity LOS Component*	D32.7	2	
		Target Wrap Velocity*	D32.8	2	
		Target SNR*	D32.9	1	
		Target Classification*	D32.10	1	
		Target Class. Probability*	D32.11	1	(19, total)
	HRR Segment (Body)	Existence Mask	H1	5	
		Revisit Index	H2	2	
		Dwell Index	H3	2	
		Last Dwell of Revisit	H4	1	
		MTI Report Index	H5	2	
		Number of Target Scatterers	H6	2	
		Number of Doppler Samples	H8	2	
		Mean Clutter Power Relative To Peak Scatterer	H9	1	
		Detection Threshold	H10	1	
		Range Resolution	H11	2	
		Range Bin Spacing	H12	2	
		Doppler Resolution	H13	4	
		Doppler Bin Spacing/PRF	H14	4	
		Center Frequency	H15	4	
		Compression Flag	H16	1	
		Range Weighting Function Type	H17	1	
		Doppler Weighting Function Type	H18	1	
		Maximum Pixel Power	H19	2	
		Type of HRR/RDM	H23	1	

		Processing Mask	H24	1	
		Number Bytes Magnitude	H25	1	
		Number Bytes Phase	H26	1	(43, total)
	Scatterer Record*	Scatterer Magnitude	H32.1	1 or 2	
		Scatterer Phase	H32.2	1 or 2	(4Max)

Dwell Segment Existence Mask: 0xFF C7 1F FA 7F 80 00 00
HRR Segment Existence Mask: 0xFF FF F0

(*NOTE: Target Report data fields are repeated for each additional target and Scatterer Record data fields are repeated for each additional scatterer.)

Table C-6 illustrates the packet sizes (in Bytes) to support the Targeting and Tracking with HRR Exploitation Class for representative target counts of 1, 42, 100, and 1000 and assuming 128 Scatterer Records for each HRR Report.

Table C-6. Packet Sizes for Targeting and Tracking with HRR

SEGMENT NAME	**PACKET SIZE (NO. OF TARGETS)**			
	(1)	**(42)**	**(100)**	**(1000)**
Packet Header	32	32	32	32
Segment Header	5	5	5	5
Dwell Segment – Body	62	62	62	62
Dwell Segment – Target Report(s)	19	798	1900	19000
Segment Header	5	5	5	5
HRR Segment – Body	43	43	43	43
HRR Segment – Scatterer Record(s) *	512	21504	51200	512000
TOTAL:	*678*	*22449*	*53247*	*531147*

(*NOTE: Packet sizes for Precision Targeting and Advanced Tracking with HRR assume 128 Scatterer Records per Target and 4 Bytes per Scatterer Record. Selection of HRR/RDM may change these results.)

ANNEX D Communications Issues

D.1 General.

This Annex discusses communications issues associated with the transmission of STANAG 4607. The format does not address issues such as error correction or packet management and assumes a perfect communications media that conforms to the assumptions listed below in section D.3. Thus, for communications media that satisfy the assumptions, the format is as efficient as possible with respect to these issues. The guidelines and detailed processes in this Annex provide guidance for using the format when the transmission layer does not meet the stated assumptions.

Section D.2 provides a general set of guidelines for handling Dwell Segments and Target Reports. Section D.3 provides a set of assumptions for the transmission layer, and Section D.4 provides guidelines for addressing imperfections in that transmission layer. Section D.5 describes a detailed procedure for splitting a STANAG 4607 packet to fit the constraints of the transmission media, and Section D.6 describes a “generic” packet splitting algorithm outside of the format, in which the transmission layer handles the issue when the number of targets from a radar dwell exceeds the packet size limits allowed by the transmission media.

It is important to note that, if it is decided to use extra format information, using these guidelines, or for any other reason, such use must be agreed between the transmitting and receiving processes. This agreement is outside the scope of this document.

D.2 Guidelines for Handling Dwell Segments and Target Reports.

STANAG 4607 does not specifically relate “radar dwells” and GMTIF Dwell Segments, although specific systems might choose to make a radar dwell and a GMTIF dwell the same. Since the two concepts are not necessarily linked, it is necessary to establish specific rules for handling the Dwell Segments, as follows:

1) It is necessary that the receiver of the Target Reports knows the area that is being reported on. This is because the fact that the radar has looked at a particular area and found no targets can be just as important as receiving targets in an area.

2) Some receiving applications or Data Exploitation Classes (e.g. for Situation Awareness) would be capable of exploiting data even if some targets are “lost”,

while some other applications (e.g. Targeting and Tracking) will not process a "dwell" unless they are sure they have all the targets for that "dwell".

3) A basic assumption concerning transmission of the GMTIF is that the transmission layer is not required to inform the receiver if a packet is lost. Therefore, since some packets might be lost in the transmission media, there is a need to send the "dwell area" and other "radar-related" parameters (such as platform position) for all the packets in which dwell or target information is provided. In other words, if a Dwell Segment with target reports is broken between multiple transmission packets, then the Dwell Segment header information must be repeated within each transmission packet, as described.

Some conclusions to be drawn are as follows:

1) If a Dwell Segment with target reports is broken between multiple transmission packets, then the Dwell Segment header information must be repeated within each transmission packet.

2) If it is important that the receiving system knows whether it has received all target reports observed in the dwell, then a scheme such as that described in Section D.4 must be used.

3) Multiple dwell segments may be sent with the same Dwell Index, indicating that the dwell has been split into multiple segments and indicating to the receiver that targets belong to the same dwell.

D.3 Transmission Layer Assumptions.

The principal assumptions and comments for the GMTIF communications media are as follows:

1) The transmission layer delivers each packet that is presented to it either complete and error free, or not at all.
2) The transmission layer is not required to inform the sender if a packet fails to get through to any receiver.
3) The transmission layer is not required to inform the receiver if a packet is lost.
4) The transmission layer transmits packets on a first-in, first-out basis.
5) The transmission layer is capable of handling "channels" – i.e. the sender can ask for a stream of 4607 data to be transmitted and the receiver can request a stream of 4607 data. If this is done, the receiver will only receive 4607 data on that channel.

6) The transmission layer can meet these assumptions, regardless of the size of the STANAG 4607 packet.

D.4 Guidelines for Addressing Imperfections in the Transmission Layer.

This section provides a set of guidelines for handling GMTIF format data when the transmission layer does not meet the assumptions described in Section D.3. In all cases, addressing these imperfections will increase the bandwidth of the data presented to the transmission layer. However, this is preferable to modifying the data format, as this would increase bandwidth when it may not be necessary.

Conceptually, the additions to the data format are applied using a layer between the format and the transmission layer, as shown in Figure D-1, where “mux” and “demux” represent the process of adding and subtracting data elements to match the capabilities of the transmission layer respectively.

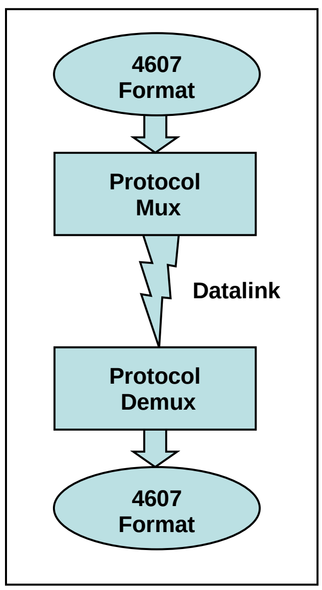

Figure D-1. Protocol “Mux” and “Demux” Layers

Taking each of the transmission assumptions in turn:

1) The transmission layer does not deliver packets error free

In this case, the sender and receiver must agree on an error detection and correction protocol.

2) 3) and 4) Packets may be lost, or may appear out of sequence.

The transmitter may add a packet sequence number, possibly sent before each packet. The receiver will then define a strategy to handle the case where a packet sequence number is “lost”. For example, if a set of packets is received with a single packet sequence number missing, it will need to consider how long it will wait before it decides that the packet will not appear, and, if this happens, how it will signal this error to the receiving application/user.

5) The transmission layer cannot handle channels.

If the transmission layer cannot handle channels, and is shared with another type of data, such as SAR, then the multiplexer/demulitplexer scheme outlined above could be extended. For example, a string could be added to each data stream, to identify its type, as shown in Figure D-2. The receiving process then has to split the data into the relevant streams for appropriate interpretation.

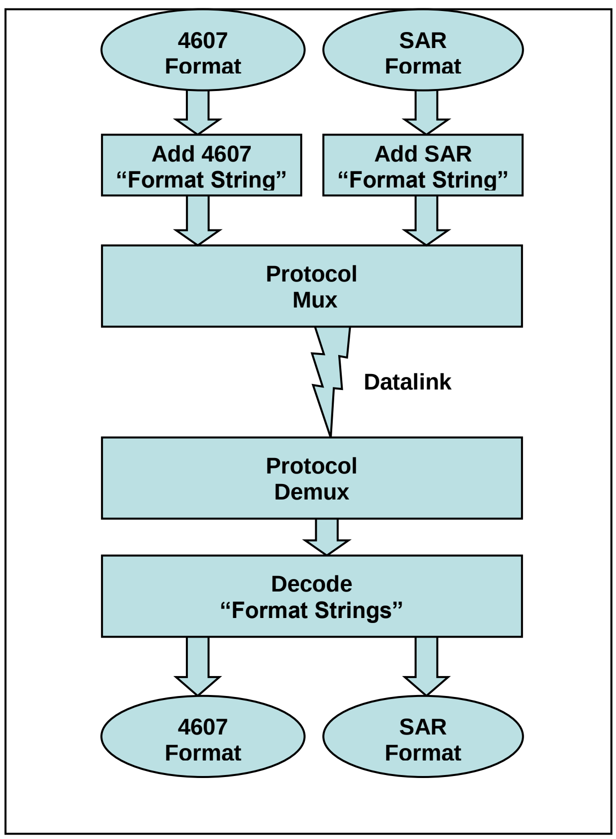

Figure D-2. Protocol “Mux” and “Demux” Layers with Channelization

6) The GMTIF packet exceeds the maximum packet size allowed by the transmission layer.

   Two possible ways in which this imperfection can be addressed are described in this document: (a) apply an algorithm to split Dwell Segments into smaller sizes to fit the constraints of the transmission media, as described in Section D.5; or (b) apply a generic packet splitting algorithm, as described in Section D.6.

D.5 Sending Target Reports in Multiple Packets.

This section describes a detailed procedure for splitting up a STANAG 4607 packet when the packet length exceeds the packet size supported by the transmission media or network. The convention for constructing STANAG 4607 packets allows multiple segments to be included in a packet and also allows data to be sent in multiple packets. Within the STANAG 4607 format the Packet Size, field P2 of the Packet Header, allows a packet size of up to 4,294,967,295 Bytes. Therefore, in the event that the transmission media for a STANAG 4607 packet limits the size of the packet (such as for error correction algorithms or to fit into the parameters of given transmission systems), it will be necessary to send the STANAG 4607 data in multiple packets.

For illustrative purposes, assume that the transmission packet length is constrained to 65,535 Bytes and that the number of Bytes to send a large number of Target Reports (or Target Reports and HRR Scatterer Records) exceeds that size. In this case, the first packet would be constructed to send the maximum number of reports without exceeding the packet size limitation and the excess reports would be sent in additional packets. Assume that the approximate number of targets for the primary Exploitation Classes defined in Annex C (i.e., Situation Awareness, Targeting and Tracking, and Targeting and Tracking with HRR) that could be transmitted in one packet of 65,535 Bytes is as follows:

- Situation Awareness (SA): 10,900 Targets
- Targeting and Tracking (TT): 4,300 Targets
- Targeting and Tracking with HRR (HT): 80 Targets

Table D-1 summarizes the packet sizes for each Exploitation Class when a notional maximum number of targets is sent in a single packet of 65,535 Bytes. Note that the calculations for the HT class assume that 128 HRR Scatterer Records will accompany each MTI Target Report.

Table D-1. Notional Maximum Number of Targets to Fit 65535 Byte Packet

ITEM	**EXPLOITATION CLASS (Max. Number of Targets Per packet)**		
	SA (10900)	**TT (4300)**	**HT (120)**
Packet Header (Bytes)	32	32	32
Segment Header (Bytes)	5	5	5
Dwell Segment – Body (Bytes)	65	71	71
Dwell Segment - Target Report (Bytes)	65400 (10900x6)	64500 (4300x15)	1200 (80x15)
Segment Header (Bytes)	-	-	5
HRR Segment – Body (Bytes)	-	-	28
HRR Segment - Scatterer Record (Bytes)	-	-	61440 (128x80x6)
TOTAL:	*65502*	*64608*	*62718*

As an example of sending Target Reports in multiple packets, assume that 6000 Target Reports captured in a single radar dwell are to be sent in support of the Targeting and Tracking (TT) Exploitation Class and that the transmission packet size is limited to 65535 Bytes. From Table D-1 the maximum number of targets that can be reported in one TT packet is 4300. Therefore, the reports must be sent in multiple packets. The process for constructing the packets is as follows:

- Create the first Packet Header:
  - Set the Packet Size (P4 of the Packet Header) to 64608 (i.e., the size to carry 4300 Target Reports);
  - Set the Platform, Mission, and Job IDs (P8-P10) as required;
  - Set remaining parameters as required.
- Create the first Segment Header:
  - Set the Segment Type (S1) to 2 (indicating a Dwell Segment is to be sent);
  - Set the Segment Size to 64576 (the size of the Segment Header and the Dwell Segment with 4300 Target Reports).
- Create the first Dwell Segment
  - Set the fields as described in Data Fields for Targeting and Tracking, Table C-3, with Target Report Count set to 4300;
  - Set the parameters for the first 4300 Target Reports, as described in Table C-3, with the MTI Report Index (D32.1) set to 0000 (decimal) for the first Target Report and to 4299 (decimal) for the last Target Report.
- Create the second Packet Header:
  - Set the Packet Size (P4) to 25608 (the size to carry the 1700 excess Target Reports that could not be carried in the first packet);
  - Set the Platform, Mission, and Job IDs (P8-P10) to the same parameters as in the first Packet Header;
  - Set remaining parameters as in the first Packet Header.

- Create the second Segment Header:
  - Set the Segment Type (S1) to 2 (indicating a Dwell Segment is to be sent);
  - Set the Segment Size to 25576 (the size of the Segment Header and the Dwell Segment with 1700 Target Reports).
- Create the second Dwell Segment:
  - Set the fields as described in the first Dwell Segment for the Data Fields for Targeting and Tracking, Table C-3, except with Target Report Count set to 1700;
  - Set the parameters for the last 1700 Target Reports, as described in Table C-3, with the MTI Report Index (D32.1) set to 4300 (decimal) for the first Target Report and to 5999 (decimal) for the last Target Report.

D.6 Generic Packet Splitting Algorithm.

This section describes a “generic” process in which the transmission layer handles the case in which the size of the GMTIF packets exceeds the packet size allowed by the transmission media. For the generic packet splitting algorithm, the “mux” and “demux” processes handle the splitting of each 4607 packet into communications packets before transmission, as well as the reconstruction of the 4607 packet post transmission, dropping the complete 4607 packet if any of its “sub-packets” are lost. This process is shown in Figure D-3.

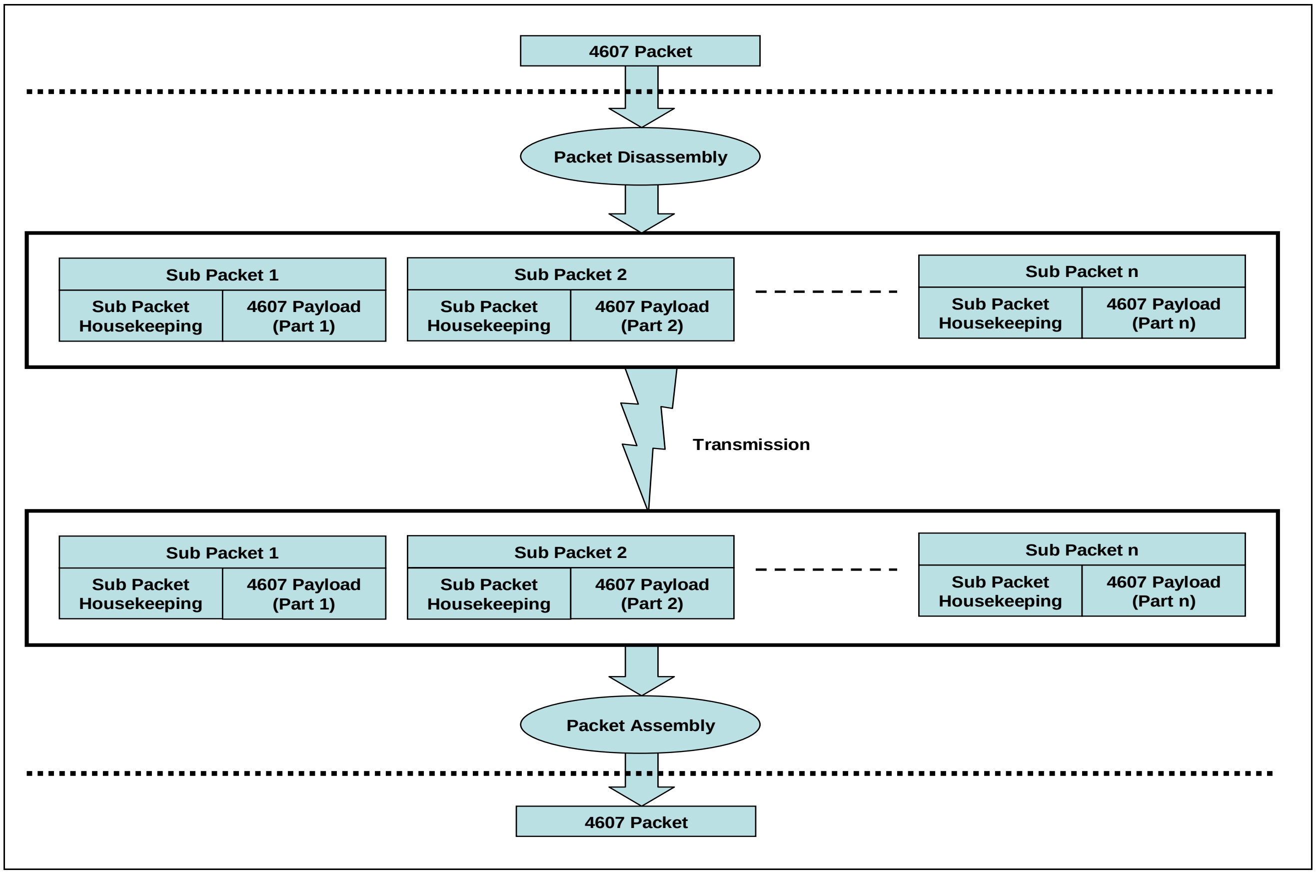

Figure D-3. Generic Packet Assembly and Disassembly

Although the means by which this 4607 packet assembly/disassembly is achieved is outside the scope of STANAG 4607, a possible scheme is described here.

- The transmission layer assigns a PacketID to each 4607 packet, which must be unique among all the packets being sent over the transmission medium.
- The 4607 packet is subdivided into SubPacketCount sub-packets.

- Each sub-packet has a SubPacketID. This is a sequence number for the sub packet within the set of sub-packets that make up the 4607 packet.

Thus, the sub-packet housekeeping data for each sub-packet is:

Sub-Packet Field	Form
PacketID	I8
SubPacketCount	I8
SubPacketID	I8

(NOTE: I8 is an 8-bit binary integer, as described in Annex B of this document.)

The packet disassembly process is as follows:

- For each 4607 packet:
  - Generate a unique PacketID
  - Calculate the number of sub-packets required, identified as SubPacketCount
  - For the first sub-packet, set the SubPacketID = 1
  - For the first sub-packet:
    - Populate PacketID, SubPacketCount and SubPacketID fields of the communications sub-packet
    - Extract the required number of Bytes and 4607 data from the 4607 packet, and insert them into the communications sub-packet payload
    - Transmit the communications sub-packet
  - For the next sub-packet
    - For the next sub-packet, set the SubPacketID = SubPacketID + 1
    - Repeat the sub-packet process for each subsequent sub-packet
- For the next 4607 packet
  - Repeat the 4607 packet process for each subsequent 4607 packet

The packet assembly process is as follows:

- Receive the communications sub-packet
- Decode PacketID, SubPacketID, and SubPacketCount
- If the PacketID is a new PacketID, create a new 4607 packet, allowing sufficient space for the SubPacketCount 4607 payload packets

- Given the SubPacketID and the communications sub-packet payload data size, insert the communications sub-packet payload data into the 4607 packet at the correct location
- When a 4607 packet has been completely filled, pass it to the “exploitation” system to be processed.

If a communications packet is lost by the transmission system, then the corresponding 4607 packet may hang in limbo indefinitely. One possible solution to this problem is for the packet assembly process to destroy incomplete 4607 packets. Possible strategies for deciding when to destroy an incomplete packet include:

- When a user-determined period of time has elapsed since a sub-packet for the 4607 was received
- When the assembly process runs out of memory.

If the communications layer guarantees that communications packets are delivered on a first-in, first-out basis, then the PacketID and SubPacketID fields can be used to detect packet loss. For example, if the PacketID changes to a new PacketID before the current 4607 packet is completed (i.e. before all of the SubPacketCount sub-packets have been received), then we know the 4607 packet will never be completed, and it can be destroyed. Similarly, if the SubPacketID field “skips” a value, then we know a sub-packet has been lost and the 4607 packet can also be destroyed. If delivery of the communications packets is not guaranteed on a first-in, first-out basis, then the discussion in Section D.4 relating to violation of assumption 4 applies.

ANNEX E Coordinate Systems and Time Standards

E.1 Geodetic Coordinate System.

This annex provides an overview of location coordinate systems and time standards. It is included in this format to provide information pertaining to coordinate systems that may be used by various sensor platforms and to define the time standard used with STANAG 4607.
A geodetic coordinate system measures location by longitude in degrees from the Greenwich Meridian, latitude as the planar angle formed between the perpendicular to the reference ellipsoid and the equatorial plane, and geodetic height in meters (height, positive or negative) between the location and the reference ellipsoid.

The convention adopted for STANAG 4607 is to report sensor, platform, and target locations in the Geodetic Coordinate System. This convention assumes the on-board capability to calculate latitude/longitude/altitude parameters from basic radar range, azimuth, and elevation measurements. Section E.4 below describes a Sensor-Centered Coordinate System which uses Range, Azimuth, and Elevation parameters to express location.

E.2 Earth-Centered Earth-Fixed (ECEF) and Earth-Centered Inertial (ECI) Systems.

Earth-Centered coordinate systems are Cartesian (xyz) systems whose origin is the center of the earth. These systems are oriented such that the xy plane lies in the earth's equatorial plane while the z axis extends through the poles (positive North) along the rotation axis. The particular orientation of the x and y axes in the equatorial plane depends on whether the system is rotating (earth-fixed) or inertial (star fixed).

a) Earth-Centered Earth-Fixed (ECEF) Systems

Also called Earth-Centered Rotating (ECR), the x and y axes are fixed to the earth and rotate along with it. The positive x axis points to 0 degrees longitude (Greenwich) and the y axis completes a right handed triad.

b) Earth-Centered Inertial (ECI)

In inertial systems, the x and y axes are fixed to distant stars. More precisely, the positive x axis points to the vernal equinox (a well defined fixed direction in space in which the sun rises on the first day of spring) and the y axis completes a right handed triad.

The Earth-Centered Inertial system is commonly used and sometimes misunderstood. Due to irregularities in the earth's rotation (precession and nutation), the vernal equinox and the plane of the equator move over time. A pseudo-inertial system is obtained by specifying the system (the equinox) for a particular time (usually called an epoch) and according to how the equinox position for the epoch was calculated: using mean or true orbit elements ('mean of date' or 'true of date') or some other model (J2000 in FK5 system). There are many conventions for this and care must be used not to 'mix' data from different systems without doing the proper transformations.

Transforming between the inertial and rotating systems amounts to a simple rotation about the z axis. The amount of rotation, given by the angle between the Greenwich meridian and the vernal equinox (a quantity called Greenwich Mean Sidereal Time - GMST) is easily calculated.

E.3 Topocentric Coordinate System (TCS).

The Topocentric Coordinate System (TCS), shown in Figure E-1, is used to locate an object with respect to a specific point on the earth's surface. The origin of a TCS is a point on the earth's surface typically specified in latitude and longitude. The fundamental plane of the TCS is the horizontal, a plane tangent to the earth's surface at the TCS origin. The principal direction (S) of the TCS is a vector pointing due South from the origin and the out-of-plane vector (Z) is normal to the horizontal, pointing in the zenith direction. A vector pointing in the East direction (E) completes the right-hand rule.

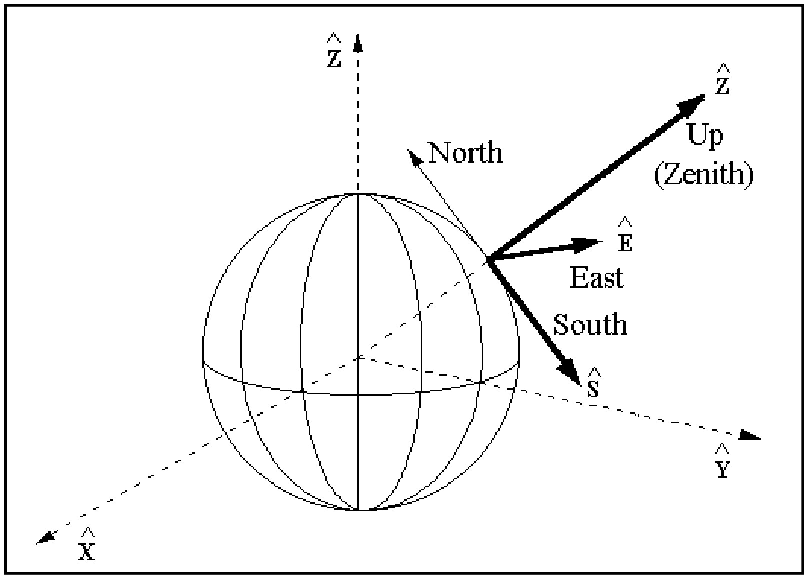

Figure E-1. Topocentric Coordinate System

The TCS is sometimes called the South-East-Zenith (SEZ) system as well as the Topocentric-Horizon frame.

E.4 Sensor-Centered Coordinate System.

The Sensor-Centered Coordinate System expresses location as Range (slant range or distance from the phase center of the sensor aperture) in meters, Azimuth Angle in degrees, and Elevation Angle in degrees. Let R, P, and Y be respectively the displacements along the roll, pitch, and yaw axes shown in Figure E-2. Then Range=sqrt(R^2+P^2+Y^2), tan(Azimuth)=P/R, and tan(Elevation)=-Y/sqrt(P^2+R^2).

Figure E-2 illustrates a sensor-centered coordinate system geometry for an airborne-based system.

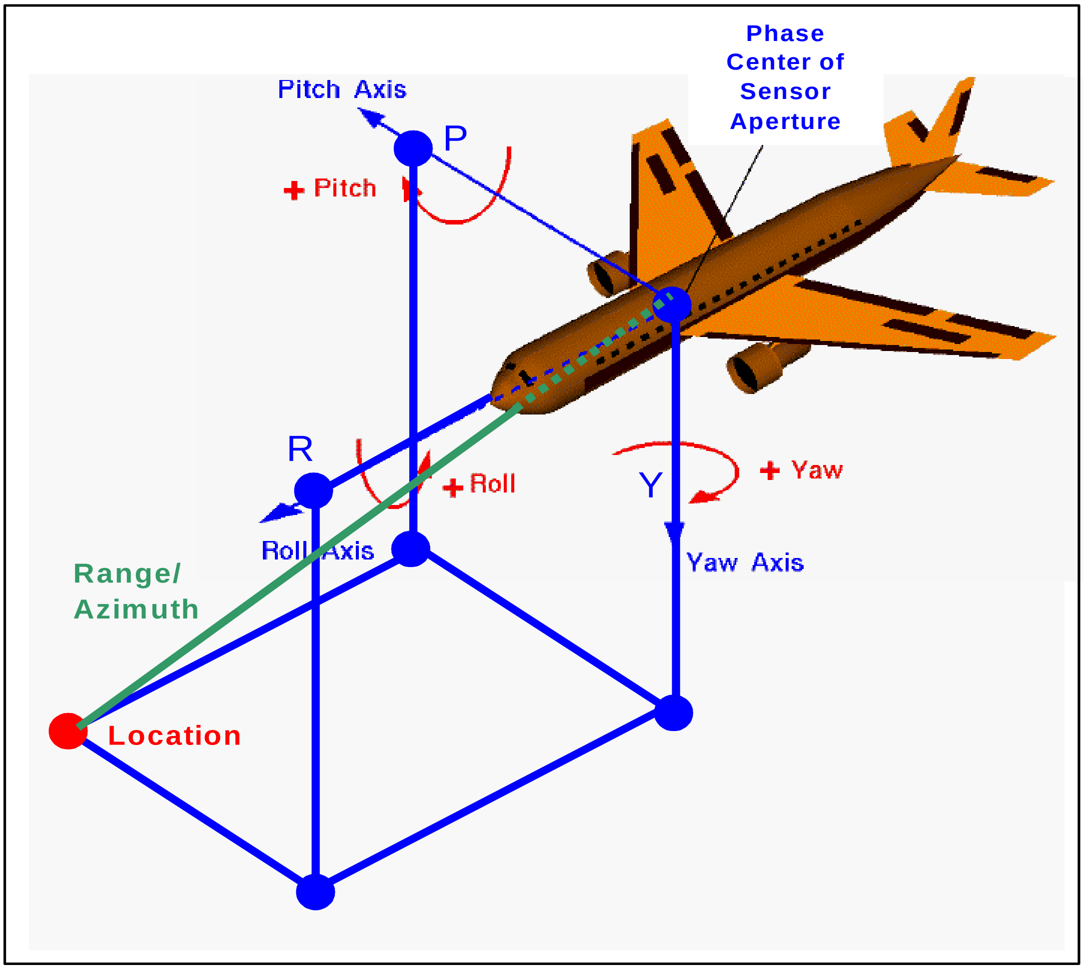

Figure E-2. Sensor-Centered Coordinate System Geometry

Figure E-3 illustrates a sensor-centered coordinate system geometry for a satellite-based system.

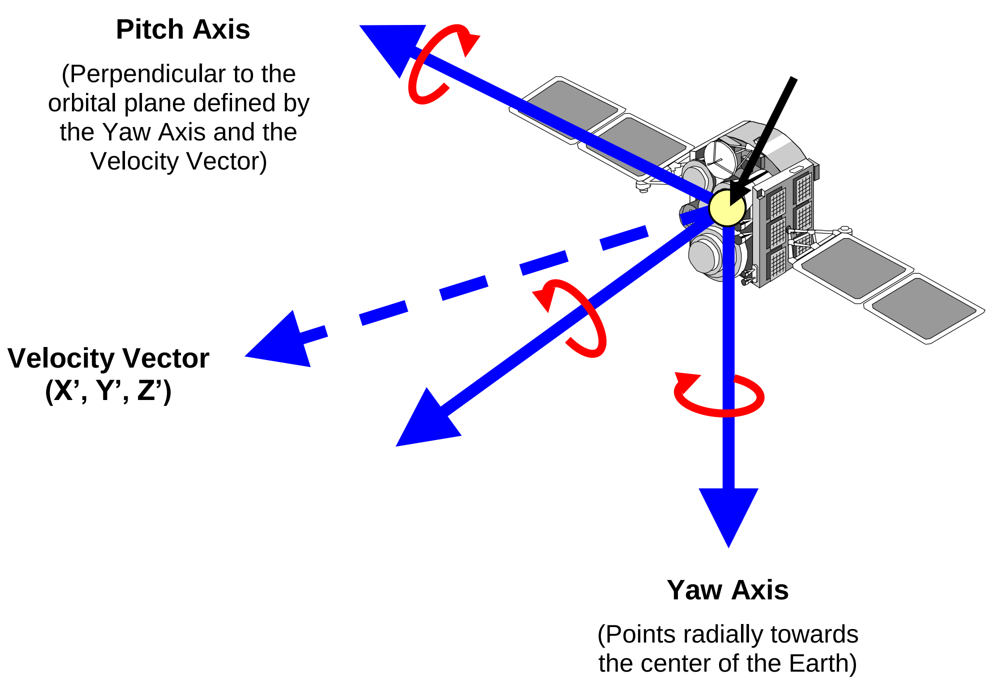

Figure E-3. Satellite-Based Sensor-Centered Coordinate System Geometry

Sensor-centered coordinates can also be expressed in the Conical Coordinate System geometry shown in Figure E-4. The difference between the target's location and the point on the ground plane directly below the sensor is a difference vector in the ground plane with components along the longitudinal direction and the latitudinal direction. The target latitude is then given by adding to the sensor latitude the length of the latitudinal component of this vector divided by the earth's radius and multiplied by 180°/pi. The target longitude is given by adding to the sensor longitude the length of the longitudinal component of the difference vector, scaled by 180°/pi, and divided by the product of the earth's radius and the cosine of the latitude. The calculations are as follows:

$$Target\_Lat = Sensor\_Lat + Difference\_Lat \times (180/pi) / (ER_p)$$

$$Target\_Long = Sensor\_Long + Difference\_Long \times (180/pi) / (ER_e * cos\_Lat)$$

Where: ER_p = Earth Radius, Polar (6356.752 Km)
and ER_e = Earth Radius, Equatorial (6378.137 Km)

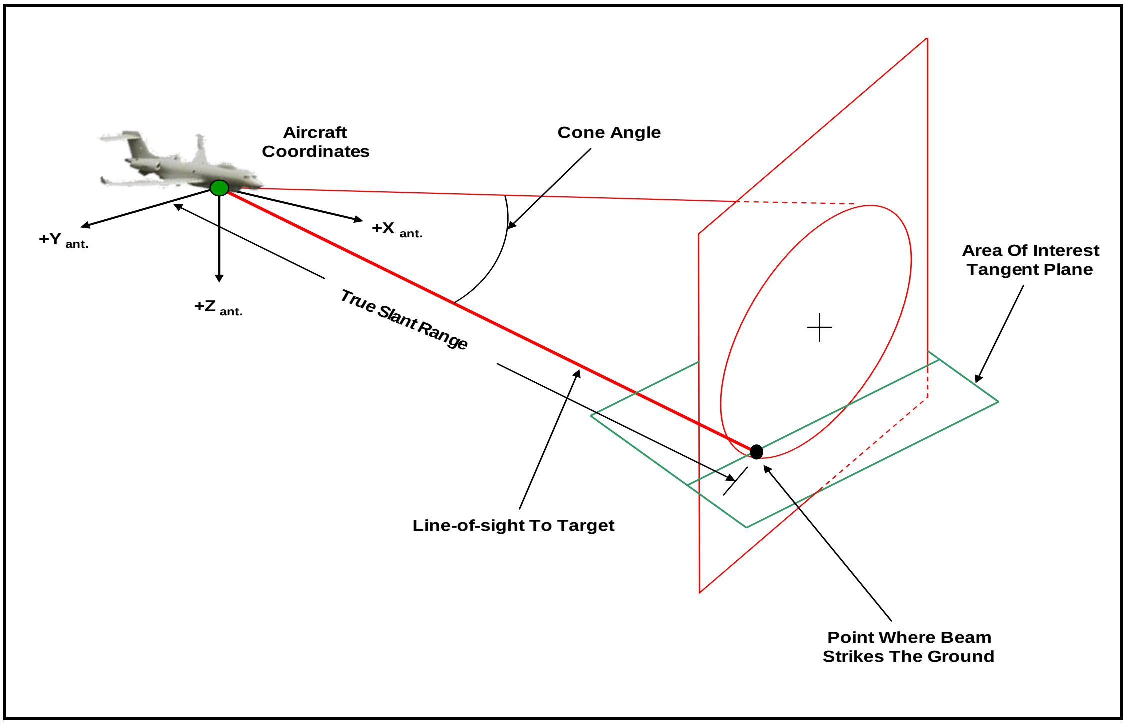

Figure E-4. Conical Coordinate System Geometry

E.5 Flat-Earth Short-Range Coordinate System.

In the Flat-Earth Model, the radar report is brought to ground by intersecting the circle created by the measured range (in kilometers) and line-of-sight angle (from the reference direction) with the horizontal plane set at a fixed level below the sensor. The difference between the target's location and the point on the ground plane directly below the sensor is a difference vector in the ground plane with components along the X (East, latitudinal) and Y (North, longitudinal) directions.

The target latitude (Target_Lat) is then given by

Sensor_Lat + ((Y) x (180/pi))/(6356.752)

The target longitude (Target_Long) is given by

Sensor_Long + ((X) x (180/pi))/(6378.137cos((Sensor_Lat) x (pi/180))

These formulae can both be simplified in implementation as long as the same accuracy is maintained.

When this coordinate system is used it is denoted as “FLAT” in Field J28 (“Geoid Model Used”) of the Job Definition Segment, Section 3.7 of the standard.

The Flat-Earth Coordinate System is illustrated in Figure E-5.

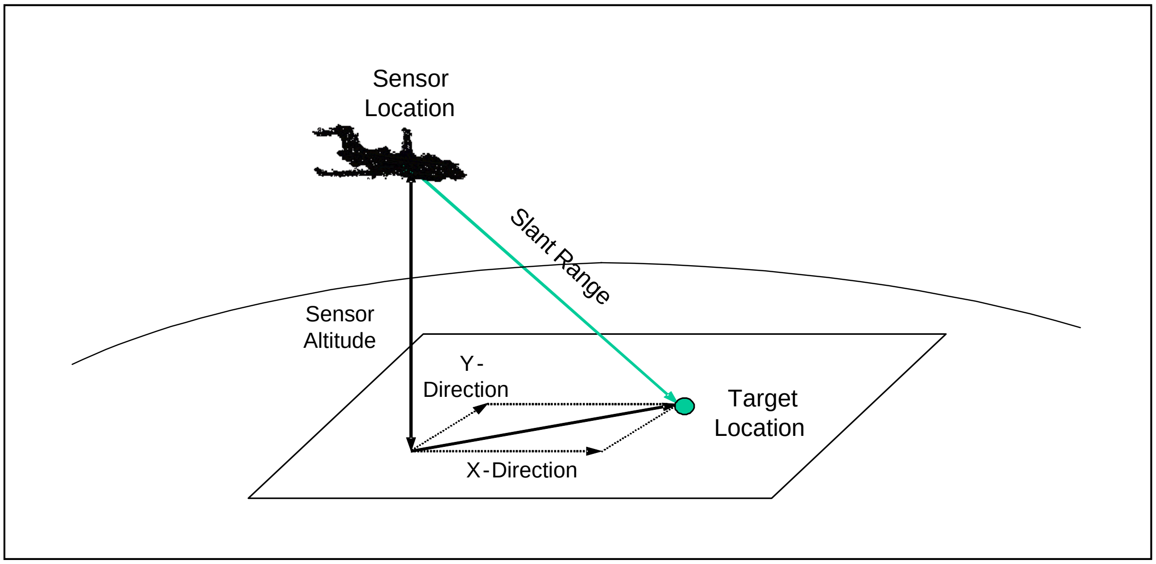

Figure E-5. Flat-Earth Coordinate System Geometry

E.6 Spaceborne Coordinate Systems

The following figures illustrate coordinate systems that could be used by spaceborne platforms and sensors.

In Figures E-6 to E-11, Platform Position (shown in blue) describes the position of the platform coordinate system origin, and is described as a set of Cartesian coordinates using the reference coordinate system for the spaceborne platform. The reference coordinate systems allowed within STANAG 4607 are listed in Table E-1. Platform Position is expressed in millimeters in the X, Y, and Z dimensions. Platform Orientation is then used to determine the roll, pitch, and yaw of the platform with respect to the rest position shown in the figures. The figures also illustrate the Sensor Position (shown in red), which is interpreted as described for the Platform Position.

Table E-1. Reference Coordinate Systems

SPACEBORNE COORDINATE SYSTEM
GEI: Geocentric Equatorial Inertial, also known as True Equator and True Equinox of Date, True of Date (TOD), ECI, or GCI
J2000: Geocentric Equatorial Inertial for epoch J2000.0 (GEI2000), also known as Mean Equator and Mean Equinox of J2000.0
GEO: Geographic, also known as Greenwich Rotating Coordinates (GRC), or Earth-fixed Greenwich (EFG)

Sensor Orientation (shown in gray in Figures E-9, E-10, and E-11) describes the pointing attitude of the sensor in terms of Yaw, Pitch, and Roll. These values refer to the successive rotations from a nominal sensor "rest" position, and result in a pointing vector that coincides with the radar "beam" from the sensor. As illustrated in figures E-9, E-10, and E-11, this pointing vector describes the orientation of the radar beam, and is independent of any mechanical articulation used to point the beam.

The relationship between the Platform Position and the sensor position is expressed as the Sensor Position Vector. This is a vector (shown in green) from the Platform coordinate system origin to the phase center of the sensor. With an Electronically Steerable Array (ESA), the phase center may vary with the operational configuration so the sensor position vector would point to the phase center in use at the time of the collect.

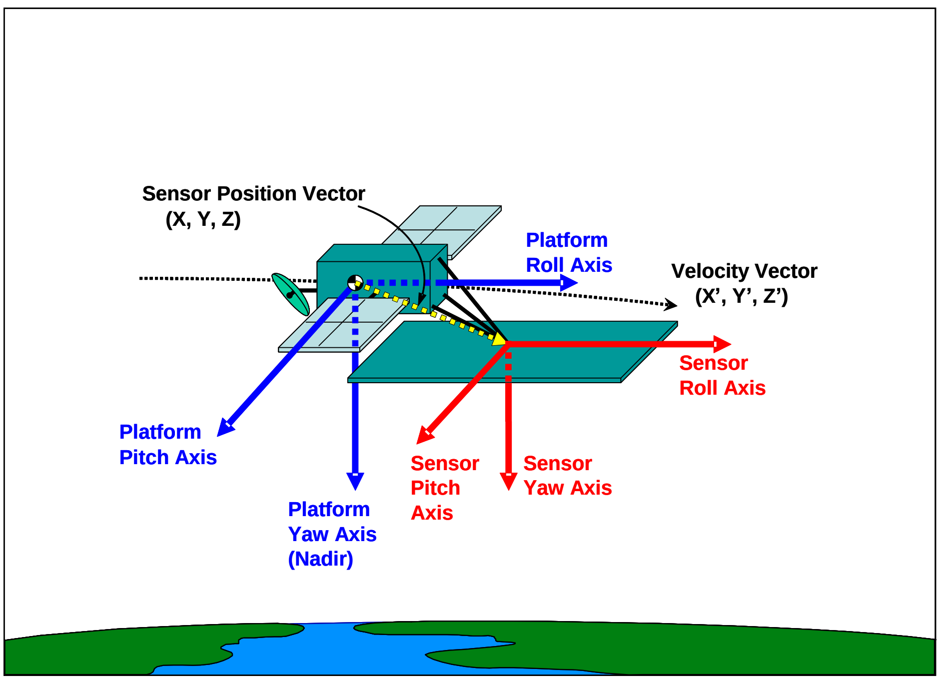

Figure E-6. Articulated ESA Sensor - Sensor Orientation Axes in the "Rest" Position (Note the order of rotation measurements must be adhered to: Yaw, then Pitch, then Roll.)

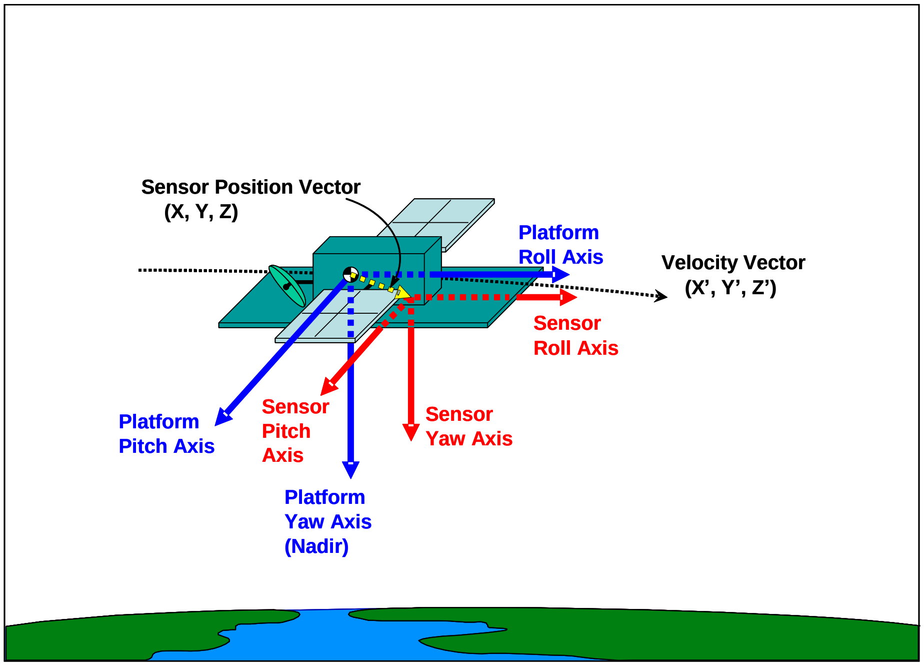

Figure E-7. Body Mounted Sensor - Sensor Orientation Axes in the "Rest" Position (Note the order of rotation measurements must must be adhered to: Yaw, then Pitch, then Roll.)

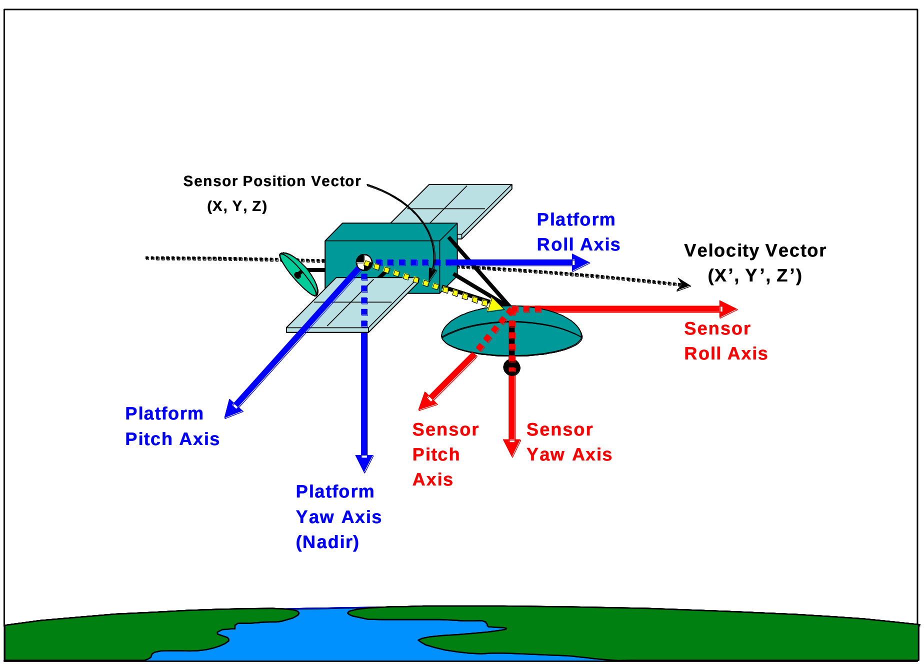

Figure E-8. Articulated Reflector Sensor - Sensor Orientation Axes in the "Rest" Position (Note the order of rotation measurements must must be adhered to: Yaw, then Pitch, then Roll.)

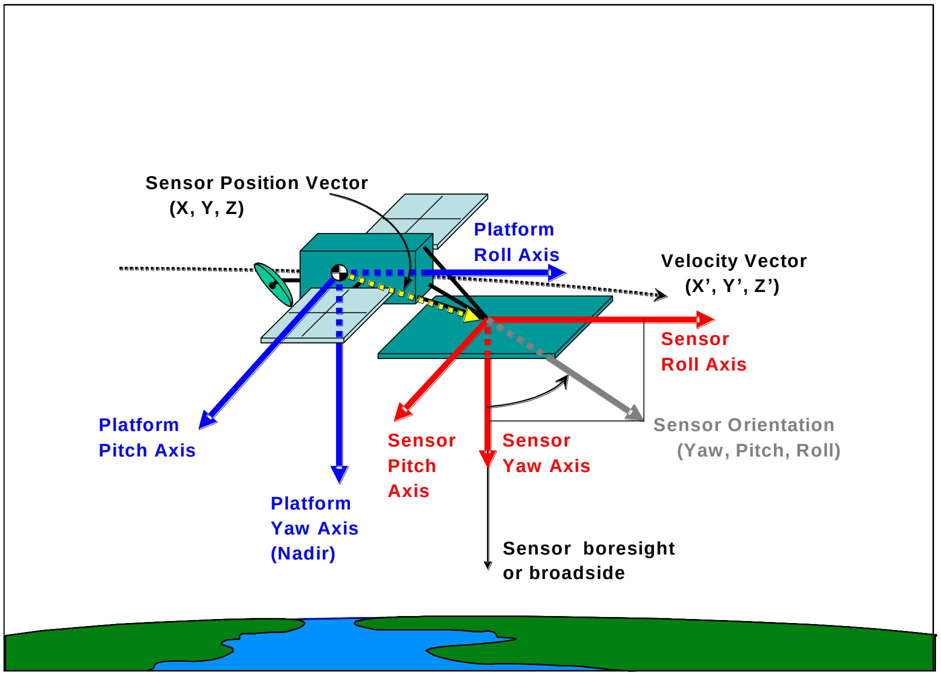

Figure E-9. Articulated ESA Sensor – Sensor Orientation or beam (gray) shown as independent of the sensor boresight or broadside.

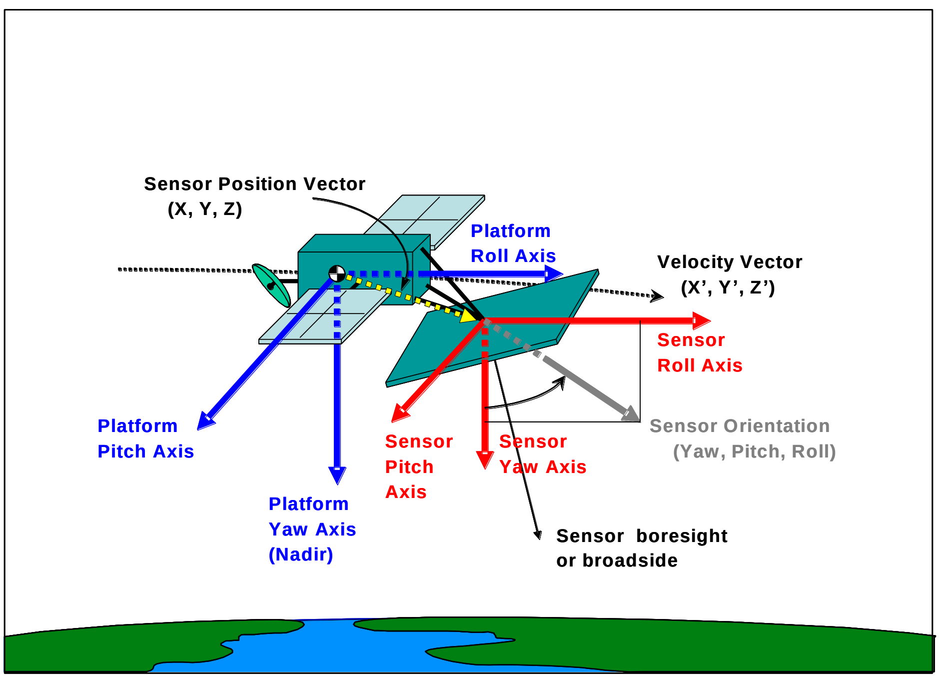

Figure E-10. Rotated Articulated ESA Sensor – Sensor Orientation or beam (gray) shown as independent of the sensor boresight or broadside.

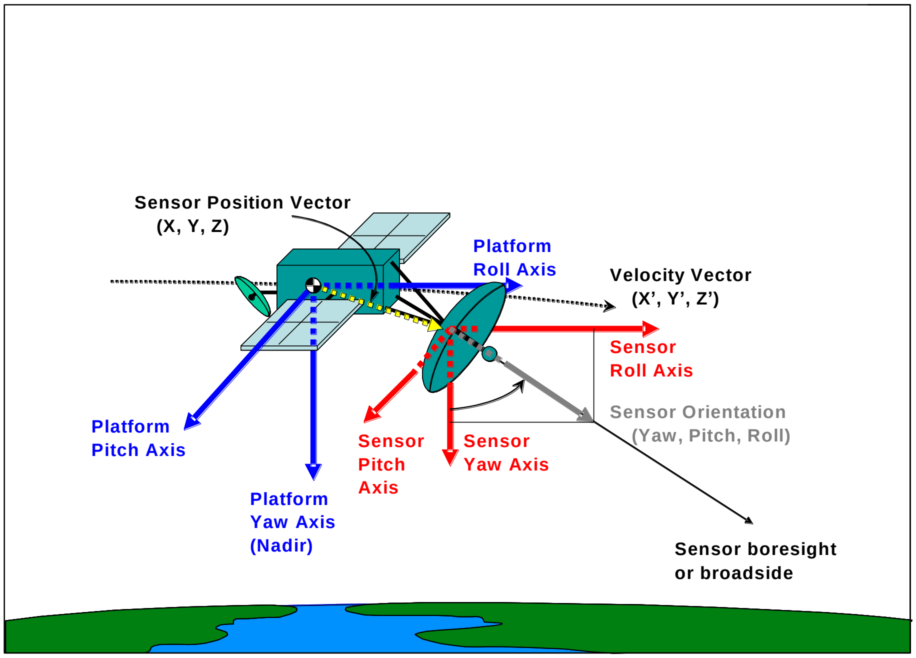

Figure E-11. Articulated Reflector Sensor - Sensor Orientation or beam (gray) shown as coincident with the sensor boresight or broadside.

E.7 Position Location Methods in GMTI Format.

The STANAG 4607 GMTI Format allows two different methods for transmitting target report position data. Depending on the transmission bandwidth available, position data can be transmitted either (a) directly in latitude and longitude coordinates or (b) with reduced bandwidth by sending scaled latitude and longitude differences from the dwell center (fields D24 and D25 of the Dwell Segment), which is always sent.

(NOTE: Field references in this paragraph refer to the fields defined in Section 3.4 of the standard. Binary integers and angles in this paragraph are defined in Section C-4 of Annex C of the standard.)

When the direct coordinates are transmitted, the pertinent coordinate location fields are:

- Target Location – Hi-Res Latitude (Field D32.2, 4 Bytes, Conditional)
- Target Location – Hi-Res Longitude (Field D32.3, 4 Bytes, Conditional)

These coordinates have a precision that is potentially equivalent at the equator to one millimeter for longitude and half a millimeter in latitude. For this case the reported target locations are simply the Latitude and Longitude locations:

Latitude = (Hi-Res Lat) = (D32.2)

Longitude = (Hi-Res Long) = (D32.3)

For the reduced bandwidth case the pertinent coordinate location fields are:

- Scale Factor – Lat Scale (Field D10, 4 Bytes, Conditional)
- Scale Factor – Long Scale (Field D11, 4 Bytes, Conditional)
- Dwell Area – Center Latitude (Field D24, 4 Bytes, Mandatory)
- Dwell Area – Center Longitude (Field D25, 4 Bytes, Mandatory)
- Target Location – Delta Latitude (Field D32.4, 2 Bytes, Conditional)
- Target Location – Delta Longitude (Field D32.5, 2 Bytes, Conditional)

The key point here is that only two Bytes each for target latitude and longitude, expressed as differences from the reference point (center Latitude and center Longitude), are required to be sent in the Target Report. The Target Report is the most bandwidth-intensive portion of the Dwell Segment because, when many targets must be reported, the location fields in the Target Reports are the most frequently sent fields.

Target latitude and longitude locations are calculated as:

Latitude = [(Delta Lat) x (Lat Scale)] + (Center Lat) = [(D32.4) x (D10)] + (D24), and

Longitude = [(Delta Long) x (Long Scale)] + (Center Long) = [(D32.5) x (D11)] + (D25)

In mathematical notation the formulas for recovering target location for this case are given, in the forward direction, by the following:

$$\mathrm{lat} = \mathrm{lat}_{\Delta} \times \mathrm{scale}_{\mathrm{lat}} + \mathrm{lat}_{\mathrm{ref}}$$
$$\mathrm{long} = \mathrm{long}_{\Delta} \times \mathrm{scale}_{\mathrm{long}} + \mathrm{long}_{\mathrm{ref}}$$

In the backward direction they are given by:

$$\mathrm{lat}_{\Delta} = \left(\mathrm{lat} - \mathrm{lat}_{\mathrm{ref}}\right) / \mathrm{scale}_{\mathrm{lat}}$$
$$\mathrm{long}_{\Delta} = \left(\mathrm{long} - \mathrm{long}_{\mathrm{ref}}\right) / \mathrm{scale}_{\mathrm{long}}$$

As described above, the latitude and longitude reference points will be the center of the dwell area, fields D24 and D25 of the Dwell Segment. The latitude and longitude scale factors, fields D10 and D11 of the Dwell Segment, are sent as 4-Byte binary angles (forms SA32 and BA32, respectively) and provide variable scales as required for the application.

When programming the calculation and decoding of these fields some care must be taken to use appropriate data types and consistent arithmetic. Latitude conversion to the 4-Byte form from the differenced form is given, in the forward direction, by:

$$\text{lat}_{S32} = \text{lat}_{\text{ref}} +_{S32} \left[\text{S16\_to\_S32}\left(\text{lat}_{\Delta}\right) \times_{S32} \text{scale}_{\text{lat}} \right]$$

Here the operations +, -, and × have been subscripted with S32 for signed 32-bit integer arithmetic. The latitude difference, $\text{lat}_{\square}$, has been converted from a signed 16 bit integer to a signed 32 bit by the type conversion function S16_to_S32.

For longitude there are two interrelated difficulties that require care: first the representation of long_{I32} and long_{ref} as unsigned integers and second, the possibility that long_{I32} and long_{ref} may lie on opposite sides of the prime. The conversion of delta long to 32 bit longitude is given by:

$$\text{long}_{I32} = \begin{cases} \text{long}_{\text{ref}} +_{I32} \left[\text{S16\_to\_I32}\left(\text{long}_{\Delta}\right) \times_{I32} \text{scale}_{\text{long}} \right] & \text{if } \text{long}_{\Delta} \geq 0 \\ \text{long}_{\text{ref}} -_{I32} \left[\text{S16\_to\_I32}\left(\left|\text{long}_{\Delta}\right|\right) \times_{I32} \text{scale}_{\text{long}} \right] & \text{if } \text{long}_{\Delta} < 0 \end{cases}$$

Here the operations +, -, and × have been subscripted with I32 for un-signed 32-bit integer arithmetic. The longitude difference, $\text{long}_{\square}$, is tested and if negative its absolute value is taken before being converted to a 32-bit unsigned integer, scaled by the longitude scale factor, then subtracted from the longitude reference value. If the sign of the longitude difference, $\text{long}_{\square}$ S is positive, the longitude difference is converted from a signed 16 bit integer to an un-signed 32 bit integer by S16_to_I32, which converts a positive signed 16-bit integer to a signed 32-bit integer; integer, scaled by the longitude scale factor, then added to the longitude reference value. In performing the calculations it is essential that the ANSI Standard C conventions for unsigned integer arithmetic be adhered to, as follows: that overflow from addition or underflow from subtraction yield a result that is congruent mod 2^n to the true mathematical operation (where n is the number of bits used to represent the operands and the result, in this case $n = 32$.)[1]

In the backward direction the difference latitude is given by:

$$\mathrm{lat}_{\Delta,S32} = \left(\mathrm{lat}_{S32} - \mathrm{lat}_{\mathrm{ref}}\right) / \mathrm{scale}_{\mathrm{lat}}$$
$$\mathrm{lat}_{\Delta} = \mathrm{S16\_from\_S\ 32}\left(\mathrm{lat}_{\Delta,S32}\right)$$

Because the scale has been chosen in such a way that $\mathrm{lat}_{\Delta,S32}$ lies between $\pm 2^{15}$ (as allowed by a signed 16-bit binary integer), there is no difficulty in applying the conversion from 32-bit signed integer to 16-bit signed integer.

Deriving the difference longitude from the 32-bit longitude and the longitude scale factor is done as follows:

If $0 \leq (\mathrm{long}_{I32} - \mathrm{long}_{\mathrm{ref}}) < 2^{16}$,

$$\mathrm{long}_{\Delta,I32} = \left(\mathrm{long}_{I32} - \mathrm{lat}_{\mathrm{ref}}\right) / \mathrm{scale}_{\mathrm{lat}}$$
$$\mathrm{long}_{\Delta} = \mathrm{S16\_from\_I\ 32}\left(\mathrm{long}_{\Delta,S32}\right)$$

By the choice of scaling factor (as described below) $\mathrm{long}_{\Delta,I32}$ lies between 0 and 2^{15}, so the type conversion is well-defined.

If $2^{16} \leq (\mathrm{long}_{I32} - \mathrm{long}_{\mathrm{ref}}) < 2^{32}$, then

$$\mathrm{long}_{-\Delta,S32} = \left(\mathrm{long}_{\mathrm{ref}} - \mathrm{long}_{I32}\right) / \mathrm{scale}_{\mathrm{long}}$$
$$\mathrm{long}_{\Delta} = (-1) \times \mathrm{S16\_from\_I\ 32}\left(\mathrm{long}_{-\Delta,S32}\right)$$

With the scale factors and reference values transmitted in the Dwell Segment, target locations can be sent as the 2-Byte signed integers (i.e., of form S16) Delta Latitude and Delta Longitude (fields D34.4 and D34.5 of the Target Reports) with significantly reduced bandwidth requirements. It is expected that some users wishing primarily to "see all the hits" for situational awareness will need only these two fields in each target report. In this manner a large number of target reports may be transmitted in a very efficient way.

Choosing the Scale Factors.

Under most circumstances the Latitude and Longitude Scale factors (Fields D10 and D11 of the Dwell Segment, Section 3.4 of the standard) will be chosen by a simple proportional scaling of the dwell dimensions as follows. Let D_{lat} denote the latitude extent of the dwell and D_{long} denote the longitude extent of the dwell. Then, provided the quantization tests (described below) are passed, the scaling factors will be given by

$$\text{scale}_{\text{lat}} = \left[D_{\text{lat}} / \text{encode\_S32}\left(2^{16}\right)\right] + 1$$
$$\text{scale}_{\text{long}} = \left[D_{\text{long}} / \text{encode\_I32}\left(2^{16}\right)\right] + 1$$

The arithmetic will be as appropriate for each factor: 32-bit signed integer arithmetic for the latitude equation, and 32-bit un-signed integer arithmetic for the longitude equation.

The quantization tests are as follows. The tests are designed to ensure that the quantization introduced by the scaling factors does not seriously degrade the resolution of the data. If either test of the pair is failed, the dwell is divided in half in the range direction (producing two dwell centers and two sets of dwell extents), new scale factors are computed and the tests are repeated. Let ΔR denote the smaller dimension of sensor resolution on the Earth's surface. Generally, this will correspond to the nominal Slant Range Standard Deviation (field J21 of the Job Definition Segment, Section 3.7 of the standard). The pair of tests consists of:

$$\text{scale}_{\text{lat}} < \text{encode\_S32}\left(\frac{\Delta R}{a} \times \frac{180}{\pi}\right)$$
$$\text{scale}_{\text{long}} < \text{encode\_S32}\left(\frac{\Delta R}{a\cos\left(\text{lat}_{\text{ref}}\right)} \times \frac{180}{\pi}\right)$$

Here "encode_S32" converts a double precision floating point number to a 32-bit signed integer. The variable, a, is the semi-major axis of the WGS-84 earth (i.e., a = 6378137.0 meters), and π = 4×arctan(1) =3.14159265... The right hand side of each test converts the distance ΔR on the Earth to an extent in either latitude or longitude, respectively. To see that the test will generally be passed, we look at the following example: consider a sensor with ΔR = 3 meters (excellent resolution) and a radar dwell extending 100km (a very long dwell). In latitude, 100 km corresponds approximately to $D_{lat} = 0.9^{o}$. 10^5 m / 2^{16} = 1.54 m, so the latitude scale is less than the sensor resolution, and the test is passed. (We neglected the rounding up in the formula for scale_{lat} and scale_{long}, but it adds only about 6378000 / $2^{32} = 1.4 \times 10^{-3}$ to the result, which is certainly negligible).

A sensor that can be sure of never failing the resolution test (and most will never fail it) need not implement the dwell-splitting scheme. A perfectly acceptable alternative in this case is to pick (or enter) fixed scaling factors which are slightly larger than the largest scale factors that might ever be computed by the scaling formulas, but which still pass the resolution test. In any event, whether or not a sender of STANAG 4607 data implements the dwell-splitting scheme, the ability of the data recipient to convert the differenced data into latitude and longitude is not impacted.

Reference:
[1] Samuel P. Harbison and Guy L. Steele, Jr., C: a Reference Manual, Prentice-Hall, Englewood Cliffs, New Jersey, 1995.

E.8 Sensor Position and Platform Location.

Sensor and platform positions are measured by longitude in degrees from the Greenwich Meridian (where the positive direction corresponds to the direction of the Earth's rotation); by latitude as the planar angle formed between the perpendicular to the reference ellipsoid for the specified earth model and the equatorial plane (with positive values occurring in the Northern hemisphere); and by height in meters either from the reference ellipsoid, or from mean sea level if a geoid model is being used,
to the point of interest. The fundamental earth reference system for STANAG 4607 is the World Geodetic System 1984 (WGS-84), for which the origin is the earth's center of mass, the equatorial radius of the reference ellipsoid is 6378137 meters, and the flattening (the difference between the equatorial ellipsoid radius and polar ellipsoid radius, divided by the equatorial ellipsoid radius) is 1/298.257223563.

Note that a similar document which also reports sensor/platform locations, STANAG 7023, the Air Reconnaissance Primary Imagery Data Standard, allows the use of other earth models in addition to WGS-84. STANAG 7023 allows the choice of altitude in meters above either (a) the Mean Sea Level (MSL), (b) Above Ground Level (AGL), or (c) as the Global Positioning Satellite (GPS) altitude above the WGS-84 ellipsoid.

Within STANAG 4607, the sensor position transmitted in the Dwell Segment (Section 3.4 of the standard) for periods when the sensor is collecting data and the platform position transmitted in the Platform Location Segment (Section 3.15 of the standard) for periods when the sensor is not collecting data are assumed to be the same.

STANAG 4607 also defines a platform orientation system at the platform location. The platform orientation is expressed in terms of Heading (or Yaw), Pitch, and Roll as a series of rotations about the Yaw Axis, Pitch Axis, and Roll Axis, respectively. Paragraph C-1.14 of Annex C to the standard describes the platform orientation, which is transmitted in fields D21, D22, and D23 of the Dwell Segment (Section 3.4 of the standard). Note that the platform orientation system defined in STANAG 4607 is the same as the aircraft reference system defined in STANAG 7023.

E.9 Time Standards and Position Location Systems.

The capability to correlate the system time standard to specific position locations for the platform/sensor and for detected targets is especially important when the product is used for multi-platform and multi-sensor exploitation. Some key requirements are: accurate spatio-temporal registration for multi-sensor tracking or fusion; the need for time synchronization due to potential latency effects caused by separate pre-processing between various sensor chains; and target correlation to support sensor cross-cueing, such as the synchronization and registration issues between a video sensor (typically with a very low field of view) and a target detected with the MTI sensor. The problem is compounded when different reporting formats are used to report or utilize the information.

For example, the time standard specified in the STANAG 4607 GMTI Format is Universal Time Coordinated (UTC), also referred to as “UTC (USNO)”, where the time of each dwell is specified as the elapsed time in milliseconds to the temporal center of the dwell from midnight at the beginning of the Reference Time for the mission. The Reference Time is passed in the Mission Segment (Section 3.3 of the standard) and is defined as the year, month, and day in which the mission originated. The Dwell Time field is large enough to accommodate time stamps up to 49 days and 17 hours after midnight at the beginning of the Reference Time. Therefore, in principle, a mission could last as long as 49 days. Section C-3 of Annex C to the standard provides additional details of the time standard.

A related standard, the Air Reconnaissance Primary Imagery Data Standard, STANAG 7023, uses a slightly different and non-compatible technique for time stamps. STANAG 7023 also uses Universal Time Coordinated (UTC), but expresses specific events (such as Mission Start Time, Platform Time at which data was collected, and Collection Start/Stop Times) in a Date Time Group (DTG) format, in absolute terms of Year, Month, Day, Hour, Minute, and Milliseconds at which the event(s) occurred. Within the Transport Mechanism of STANAG 7023, each transmitted Data File is identified with a Time Tag in its Header File, where the Time Tag for each transmitted data packet is incremented from the Mission Start Time (at a selectable rate), and the timing of each sensor data sample can be described as the time relative to the Time Tag in its associated Header File.

When STANAG 4607 and STANAG 7023 products are both transmitted on a single data stream, the correlation of time and position data is the responsibility of the receiving exploitation system. Users should be aware of the two different time standards and should understand that they are incompatible and could lead to cross-cueing and registration errors unless the differences are properly identified and handled accordingly.

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ANNEX F STANAG 4607 Frequently Asked Questions

This annex presents several Frequently Asked Questions ("FAQs") and other items pertaining to STANAG 4607. It is in the form of a series of Questions and Answers in several subject areas.

Question 1: Why is it necessary to use STANAG 4607?
Answer 1: STANAG 4607 is necessary when Ground Moving Target information, particularly from radar sensors, needs to be used by various systems that are likely built by various contractors, and perhaps operated by various countries. Formats previous to STANAG 4607 worked for the small set of sensors and receiving workstations, but technical interoperability problems surfaced as other sensors and more stringent needs by the military evolved. STANAG 4607 provides a common data format to improve the technical interoperability problem.

Question 2: What is STANAG 4607 based upon?
Answer 2: STANAG 4607 is based on the following principles:

a. Data needs to be transmitted from several different sensors in a format that is designed to benefit many different National sensor systems;
b. Integrity of the data collected from the sensor;
c. Packets are scalable because sufficient data needs to pass through low-bandwidth data links such as UHF SATCOM or communications media such as Ethernet;
d. Common coordinate systems where curved earth effects are considered;
e. Sufficient accuracy for stand-off ISR guided munitions.

Question 3: What is the structure of STANAG 4607?
Answer 3: STANAG 4607 uses a packet structure for transmission, as differentiated from a file structure composed of segments. The packet structure of STANAG 4607 allows information native to a particular sensor to be transmitted in different ways to accommodate:

a. A variety of data link bandwidths, both high and low;
b. Changes in transmission protocol from sender to receiver;
c. The capability to send dwells in multiple packets.

Question 4: How is the STANAG 4607 data gathered?
Answer 4: Data to be sent in the STANAG 4607 format can be gathered by several different means:

a. Gather data while loitering over an area;
b. Gather data from the best possible vantage (i.e., when the collection criteria satisfies a specific point on the ground) when possible (perhaps one-shot);

c. Hybrids (above during different missions or interleaved in the same mission);
d. Separate sensors acting together.

<u>Question 5</u>: What communications processes are accommodated in STANAG 4607?
<u>Answer 5</u>: STANAG 4607 can accommodate dedicated, time-shared, and networked communications processes.

<u>Question 6</u>: Why the emphasis on radar dwell and dwell segment?
<u>Answer 6</u>: Radar systems process radar transmissions and returns in time intervals. The intervals are known by various names depending on the radar specialty, e.g. radar dwells, arrays, scans, etc. The term radar dwell was chosen as representing a fundamental front-end related engineering term with its associated concepts. Regardless, the radar returns are filtered and processed by the sensor to determine detected targets, a.k.a. "detections." The detections are reported by the sensor. One choice is to report a time-of-detected-ground-movement estimate for each and every detection. The consensus of the technical experts developing the STANAG was that a time-stamp for each and every detection would be prohibitive for bandwidth-limited systems, and that a dwell segment could be generated by the sensor for each and every detection if desired. The dwell segment as defined in the STANAG 4607 does not have to have a one-to-one relationship to a radar dwell. The dwell segment allows zero or more detections to be associated with a representative time stamp and sensor instantaneous position.

<u>Question 7</u>: How much importance on low-bandwidth compatibility?
<u>Answer 7</u>: Several sensor systems use low bandwidth air-to-ground data links. In addition, sensor detections in the form of reports are usually desired in real-time. It is undesirable to buffer the reports from the sensor such that an intolerable latency is imposed. STANAG 4607 must consider such systems when balancing content with how much data can be transmitted per unit time. An observable effect is that sensor reports are dropped during transmission, thereby denying the receiver a complete picture of the area on the ground.

The number of ground movers in the observable ground area is proportional to a sensor's detections. A sensor should detect each ground mover. The number of ground movers is best limited by reducing the observable ground area for each dwell. The number of mandatory data bits for each reported detection is a key limitation. Once the maximum capacity of the data link is exceeded then either reports are dropped or an entire packet is incomplete.

<u>Question 8</u>: How is a STANAG 4607 packet constructed?
<u>Answer 8</u>: A STANAG 4607 packet will typically include a Packet Header, at least one Mission Segment, a Job Definition Segment, Dwell Segments, and a

number of Target Reports. Refer to Figure A-1 in Annex A of this implementation guide for an illustration of a typical STANAG 4607 packet.

Question 9: How is the reference time in the mission segment used?
Answer 9: The reference time is an arbitrary value from which all the time stamps reported by the sensor are referenced. Though the smallest unit in the field is a date, the reference is to midnight at the beginning of the day (i.e., 0000 hours UTC) of the date.

Question 10: How is the revisit counter used in the Dwell Segment?
Answer 10: The revisit concept is a powerful tool. The key part of the concept is that the sensor be tasked to collect data on one or more specific area(s) of the ground on a periodic basis. This allows ground movers to be tracked, and for identifying features to be accrued as evidence to the identity of the ground mover.

Not all sensor systems can support the revisit concept with ease. Some sensor systems necessarily (due to weight and power limitations) have separate mission planning, therefore sensor tasking, separate from data collection, processing and reporting.

The revisit counter is incremented for each instance for which data is collected on a particular geographic location by the sensor within a mission. With a mechanically scanned antenna mounted on a traditional ISR platform, the usage is straightforward. The sensor scans a geographic area, and the revisit counter is incremented either when the sensor finishes the scan or initiates the next scan. The increment is whether or not an aft-forward or windshield-wiper motion is used. Usually, the dwell counter is reset when the revisit counter is incremented.

Active Electronically Scanned Arrays (AESAs) and the increasing use of UAVs and UCAVs make a standard use of revisit counter more difficult. The UAV or UCAV allows the platform greater freedom in its orbit, thereby clouding the definition for when a particular geographic location is viewed again. For example, a circular or square orbit about the geographic area may defy a clear indication when the area is viewed again. The ability of an AESA to selectively place a radar footprint on the ground in most any order can cloud a standard usage of the revisit counter.

Regardless, the revisit counter can be used to order, thereby relate, dwells. The way in which to do so is best recommended by the sensor manufacturer as it may depend on the sensor's particular design purpose and mission.

Question 11: What is the Processing History Segment and how is it used?
Answer 11: The Processing History Segment, as defined in Section 3.14 of the standard, provides a means to record the post-mission processing that may have

been applied to GMTI data in order to generate a job to meet particular requirements.

The concept for the Processing History Segment is that the original data (as generated by the platform), will have unique identifying values for Nationality ID, Platform ID, Mission ID, and Job ID (abbreviated as <DataSetID> for this discussion) for a given radar job. This is true for all data. Fields C2 to C5 (Nationality, Platform, Mission, and Job IDs) in the main body of the Processing History Segment identify the original radar job to which subsequent processing is to be applied, and the corresponding fields C6.2 to C6.5 of the Processing Record identify the modified radar job. Field C6.6 of the Processing Record describes the additional processing performed on the data, in accordance with Section 3.14.6 of the standard. Fields C1 of the main body and C6.1 of the Processing Record, respectively, identify the number of records on which processing has been applied and the sequence number of each of those records.

If processing is not applied to the original radar job, then the Processing History Segment is not transmitted.

When the first processing is applied to a set of data from a given radar job, the Processing History Count (data field C1) in the Processing History Segment is set to 1 and a new Processing Record is generated. The Nationality, Platform, Mission, and Job IDs (the "<DataSetID>") in fields C6.2 to C6.5 of the Processing Record are set to identify the modifying system performing the processing, and field C6.6 is chosen to specify what processing was done. In this case (the first processing), the Processing History Count (field C1) will be 1, the entries in data fields C2-C5 will be the <DataSetID> values for the original radar job, the entry in field C6.1 will be 1, the entries in fields C6.2-C6.5 will be the <DataSetID> values for the first modifying system, and the entry in field C6.6 will identify the processing performed. Fields C6.1 to C6.6 are sent as the first Processing Record and appended to the main body of the Processing History (fields C1-C5).

If subsequent processing is performed on the processed data, then the Processing History Count (field C1) is incremented, the Processing History Sequence Number (field C6.1 of a new processing Record) is set to the appropriate value, the <DataSetID> of the subsequent modifying system is entered into fields C6.2-C6.5 of that Processing Record, and the entry in the new field C6.6 identifies the additional processing performed. The new Processing Record is appended to any earlier Processing Records and transmitted along with the main body of the Processing History Segment.

The following example illustrates the usage of the Processing History Segment.

a) The initial radar data is generated, having the <DataSetID> for the original radar job. Since the data has not been processed or changed, the Processing History Segment is not transmitted.

b) Assume that this data is first processed by Area Filtering (value=0x0001) to produce the first Processing Record with the <DataSetID> of the modifying system. The following table illustrates the fields transmitted in the main body and first processing record of the Processing History Segment. (NOTE: The values shown in the table are notional and are for illustrative purposes only.)

MAIN BODY		1st PROC. RECORD	
FIELD	**VALUE**	**FIELD**	**VALUE**
C1	3	C6.1	1
C2	US	C6.2	UK
C3	AB12345678	C6.3	CD23456789
C4	1234567	C6.4	2345678
C5	000123	C6.5	111123
		C6.6	0x0001

c) Assume that the processed data is processed again, this time by Security Filtering (value=0x0800), to produce an additional Processing Record with a new <DataSetID> for that modifying system. The following table illustrates a notional set of fields to be transmitted for the main body and the first and second processing records.

MAIN BODY		1st PROC. RECORD		2nd PROC. RECORD	
FIELD	**VALUE**	**FIELD**	**VALUE**	**FIELD**	**VALUE**
C1	3	C6.1	1	C6.1	2
C2	US	C6.2	UK	C6.2	GE
C3	AB12345678	C6.3	CD23456789	C6.3	EF34567890
C4	1234567	C6.4	2345678	C6.4	3456789
C5	000123	C6.5	111123	C6.5	222123
		C6.6	0x0001	C6.6	0x0800

d) Assume that the data is processed a third time, by Location Registration (value=0x0080), to produce a third Processing Record and <DataSetID> to be transmitted as shown in the following table.

MAIN BODY		1st PROC. RECORD		2nd PROC. RECORD		3rd PROC. RECORD	
FIELD	**VALUE**	**FIELD**	**VALUE**	**FIELD**	**VALUE**	**FIELD**	**VALUE**
C1	3	C6.1	1	C6.1	2	C6.1	3
C2	US	C6.2	UK	C6.2	GE	C6.2	US
C3	AB12345678	C6.3	CD23456789	C6.3	EF34567890	C6.3	GH45678901
C4	1234567	C6.4	2345678	C6.4	3456789	C6.4	4567890
C5	000123	C6.5	111123	C6.5	222123	C6.5	333123
		C6.6	0x0001	C6.6	0x0800	C6.6	0x0080

e) The process can continue for each new processing added to the original data, with additional Processing Records transmitted as necessary.

Question 12: What is the rationale for developing a STANAG 4607 GMTI XML format?
Answer 12: The GMTI XML format was developed in conformance with the migration paths of GMTI systems and programs evolving from present “stovepiped” systems to future net-enabled systems. It is not intended as a replacement for the binary GMTI format, but as a means for users whose systems can read, parse and utilize XML in their systems, displays, and applications to access the GMTI data in the XML format. It provides a means of making the GMTI data in the XML form available for ingest and cataloguing in a library, such as NSILI, thereby providing the capability to query, discover, and retrieve XML data. It is written as a one-to-one correspondence with STANAG 4607 in order to avoid misrepresenting STANAG 4607 data. Configuration management of XML processes are simplified, since there is only one recognized standard. Most importantly, it is interoperable to STANAG 4607 and provides STANAG 4607 data in XML without misrepresentation or misinterpretation.

Question 13: What is the process for adding new capabilities to STANAG 4607?
Answer 13: New capabilities for STANAG 4607, in the form of “extensions”, are added in accordance with the “Guidelines for Adding New Capabilities to STANAG 4607”, as described in Annex J of this document. The process includes the preliminary registration of proposed new extensions with the STANAG 4607 Custodial Support Team (CST), the assignment of provisional numbering and identification of the proposed new extension by the CST and entering the details of the proposed new extension into the *Compendium of Registered Extensions to the NATO Ground Moving Target Indicator (GMTI) Format*. At that point the extensions are available for implementation, validation, and test by the GMTI community. After appropriate validation and test, and with the approval of the Custodian, Registered Extensions are re-identified as Controlled Extensions and entered into the “Registry of Controlled Extensions for STANAG 4607”, Annex L of this document. Extensions to the STANAG may be proposed by any interested party and are submitted in accordance with the standard submittal form identified in Appendix 1 of Annex H of this document. Refer to that Annex for further information and detailed guidelines.

<u>Question 14</u>: What are the STANAG 4607 Exploitation Classes and how are they used?
<u>Answer 14</u>: Exploitation Classes provide specific levels of detail pertaining to various user requirements. The currently defined Exploitation Classes are: Situation Awareness (SA); Targeting and Tracking (TT); and Targeting and Tracking with High Range Resolution (HT). The Exploitation Classes are intended to guide the developer in choosing the specific segments and data fields to be used for the exchange of data for specific applications. Refer to Annex C of this document for further detail.

<u>Question 15</u>: How is the Free Text Segment used?
<u>Answer 15</u>: The free text segment can be used as a means by which amplifying information is added to information already contained within an existing GMTIF message. It is not intended to be a means by which developers are able to circumvent the segments provided within STANAG 4607. The free-text capability provides a long-term flexibility for capturing information, comments, and additional data pertaining to STANAG 4607 messages, and provides the capability for bandwidth-challenged users, or users without collaboration opportunities, to include information relevant to the data files. It enables the recording of situational data relevant to future use of the information, including multi-platform collection scenario information. Free-text also allows the capability for the independent search of parameters with keywords, unstructured text searches, etc. as applications are web-enabled. An additional use of free-text is to provide annotation information on MTI products. There is currently no standard format for "exploited" MTI, and the Free Text Segment provides an interim means for passing exploitation and annotation information with the data files for further use.

Examples of the recommended use of this free text segment include:

Operational Context Information: *"Movement on Route Zulu corresponds to ingress by Task Force Delta at 1045Z"*

Historical Context Information: *"Flow through checkpoint Bravo highest from 0700Z to 1000Z – 10 vehicles/min – Suspected movement to assembly area Charlie"*

<u>Question 16</u>: How are the versions of STANAG 4607 identified?
<u>Answer 16</u>: Historically, the edition of the standard ("m") is captured as a number. Due to the current NSO naming conventions, editions are now letters. Therefore, edition "A" equates to the number 4, "B" to the number 5 and so on. The version ("n") should be a number and directly correspond to the standard's version number.

Versions of STANAG 4607 are identified as Edition Number and Amendment Number. The version identification code, transmitted as a two-character alphanumeric code in Field P1 of the Packet Header, indicates the version of STANAG 4607 to which the packet conforms. It is of the form “mn”, where “m” indicates the Edition Number and “n” indicates the Amendment Number of that edition. For example, a value of “10” indicates that it is Edition 1 without any amendments. A value of “11” indicates that it is Edition 1 with Amendment 1 incorporated, and a value of “20” indicates that it is the second edition without any amendments.

The STANAG does not restrict the range values of the two characters in field P1, and only states that they are alphanumeric. In practice, if each character is allowed to range from 0 to 9 (in decimal) and from A to F, this could be interpreted as 16 discrete values for each character, thus allowing up to 16 Editions and 16 Amendments of each Edition to be identified.

Question 17: What is the relationship between AEDP-4607 and AEDP 4607.1 to STANAG 4607?
Answer 17: Early versions of the STANAG 4607 standard were published directly within the STANAG 4607 document. Today, the STANAG document simply describes the agreement to use the standard now captured in AEDP-4607. The implementation guidance for this standard is published in a separate document numbered AEDP-4607.1.

ANNEX G STANAG 4607 Test and Validation Procedures

G.1 General

This Annex describes test and validation procedures and criteria for the NATO Ground Moving Target Indicator Format (GMTIF), STANAG 4607. The Joint Capability Group on Intelligence, Surveillance, and Reconnaissance (JCGISR), the tasking authority for the Custodian of STANAG 4607, oversees the process whereby Moving Target Indicator (MTI) systems achieve and sustain GMTIF compliance through the GMTIF Test Program. GMTIF test program policies and procedures are outlined in the NATO ISR Interoperability Architecture (NIIA) Test and Evaluation Program Plan, AEDP-2, Volume 2, ANNEX B, and detailed in this Annex.

G.2 Introduction

G.2.1 Purpose

This Annex establishes test and validation procedures for compliance testing and compliance registration activities for STANAG 4607. The compliance testing and compliance registration activities are necessary for STANAG 4607 implementations intended for use within NATO in order to reduce cost and time associated with establishing interoperability. This Annex identifies the GMTIF compliance testing, test requirements, roles and responsibilities. It provides guidance for test and registration activities in conformance with the global NIIA structure.

G.2.2 STANAG 4607 GMTIF Compliance Testing Goals

Compliance testing is part of an overall software test and quality assurance effort. The overall goal of STANAG 4607 testing, as identified in this Annex, is to verify the degree and the completeness to which a GMTIF implementation is compliant with the standard and the implementation guide. The particular goals are as follows:

- Identify syntactical correctness and format compliance in STANAG 4607 files;
- Identify degree of completeness of STANAG 4607 implementations;
- Identify correct transmission and dissemination of STANAG 4607 files;
- Identify correct interpretation of 4607 files by STANAG 4607 files users;

- Identify robustness of STANAG 4607 file users when receiving faulty data;
- Identify short-comings and ambiguous definitions and implementation statements in the standard and the implementation guide;
- Register correct STANAG 4607 implementations.

In order to improve interoperability in all these cases, problem sources must be identified and resolved, and the implementations must be re-tested. If the tests are designed to cover the full range of the STANAG, then the probability for complete technical interoperability at the protocol level is greatly improved. When the tests are conducted successfully under the supervision of a registration authority, a GMTIF compliance certificate will be issued.

G.2.3 Scope

This document applies to test, registration and interoperability programs for STANAG 4607 implementations. This document encompasses the following GMTI test, validation and registration information:

- Requirements for the test, validation and certification procedures;
- Roles and responsibilities;
- Definitions of test, validation and certification criteria;
- Requirements for planning, executing, and reporting on the test, validation and certification programs.

G.2.4 References

G.2.4.1 Policy and Planning Documents

Allied Engineering Documentation Publication No. 2 (AEDP-2), Volume 2, Annex B, September 2005: NATO Intelligence, Surveillance, and Reconnaissance (ISR) Interoperability Architecture (NIIA) Test and Evaluation Program Plan

G.2.4.2 NATO Standardization Agreements (STANAGs) and Allied Publications (APs)

STANAG 4607, Edition 2, 2 August 2007: NATO Ground Moving Target Indicator Format (GMTIF), North Atlantic Treaty Organisation, NATO Standardization Agency

Allied Engineering Documentation Publication No. 7 (AEDP-7), Edition 1, April 2008: NATO GMTIF STANAG 4607 Implementation Guide

(NOTE: Copies of STANAGs can be obtained from the NATO Standardization Agency.)

G.2.5 Applicability

The test and validation procedures described herein conform to the test program concept described in Annex B to Volume 2 of the NIIA document, AEDP-2. The test concept defines three types of testing, as follows

- document validation,
- compliance tests,
- interoperability tests.

The test and validation procedures described herein support all three types of testing. Validation and compliance tests are managed by the Custodian and interoperability tests are managed by the Imagery Working Group (IMWG) of the Joint Capability Group on ISR (JCGISR).

In order to assure correct implementation of STANAG 4607 in GMTI systems, the test, validation, and registration procedures described herein are applicable during application development and implementation for operational use. Nations, Major NATO Commands (MNC) and NATO organisations responsible for the development, configuration management, and implementation of STANAG 4607 will conduct testing in accordance with this plan.

In accordance with the NIIA testing concept, organizations using these test, validation, and registration procedures are expected to conform to the following guidance:

STANAG 4607 compliance testing is mandatory for MNC, NATO organisations and host nations employing STANAG 4607 in NATO owned information systems.
In addition to the GMTI compliance testing identified here, interoperability testing within the NATO Interoperability Framework is highly recommended for nations intending to employ GMTI information systems in NATO operations.
GMTI compliance testing is encouraged for nations implementing GMTI systems even when intended for national use.
Industries which develop GMTI systems are recommended to submit their products for testing under the provision of these test, validation, and registration procedures. NATO and nations that acquire GMTI implementations to use in their information systems should insist on standard compliant products.

G.3 Test Responsibilities and Relationships

G.3.1 STANAG 4607 Shareholders

STANAG 4607 shareholders or those with expressed interest in the testing and validation of STANAG 4607 can be categorized into four general groupings, as follows:

1) Engineers and software developers of systems which generate GMTI output. The main interest of these users is to produce STANAG 4607-compliant output streams.
2) Engineers and software developers of systems, which use GMTI as input. The main interests of these users are:
    a. that their systems react properly when receiving a format-compliant GMTI input stream,
    b. that their systems issue warnings when receiving incorrect input streams,
    c. that their systems continue to function when receiving incorrect input streams,
    d. that the STANAG 4607 formats applied support the full range of their application requirements (e.g. tracking based on GMTI, fusion, track management).
3) Operational personnel using the GMTI data and GMTI exploitation products to support the planning or conduct of operations. This group is not involved in the technical testing and does not state requirements concerning technical testing. This group relies on good technical interoperability to develop operational procedures for the use of GMTI and GMTI exploitation products in operations and planning.
4) NATO Authorities, NATO groups and agencies tasked with the conduct of test, validation, and registration programs for STANAG 4607. This group provides input to NATO’s Rolling Interoperability Programme, which enables NATO to assess the state of interoperability for NATO and national systems.

Note that the four shareholder groups may each have different objectives for testing and validation of STANAG 4607. As an example, the two groups of engineers and software developers (those involved with GMTI as an output and those involved with GMTI as an input) may both be interested in a particular subject. Therefore, it will be necessary to develop a common set of objectives, tests, and sub-tests for that specific subject. The two groups must cooperate to assure compliance and interoperability not only within one of the two groups, but across both groups.

G.3.2 Test Program Responsibilities

Figure G-1, derived from the NIIA test concept document, Annex B to Volume 2 of AEDP-2, illustrates the test program organisational relationships.

The NC3 (NATO Consultation, Command, and Control) Board (NC3B) Interoperability Sub-Committee (ISC) has the overall responsibility for NATO interoperability of C3 systems. The NATO Air Force Armaments Group (NAFAG) Joint Capability Group for ISR (JCGISR, formerly Air Group 4 for ISR) has the responsibility for the development and configuration management of STANAG 4607. The JCGISR oversees the process whereby systems with GMTI implementations achieve and sustain interoperability through the test program. The JCGISR appoints the STANAG 4607 Custodian, who manages the configuration and testing of the STANAG. The Custodian will also review and approve test procedures for the GMTI test facilities.

The STANAG 4607 Custodian is the delegated authority for the management of the STANAG 4607 test program. Validation of the standard is an integral part of the development and configuration management procedures, and the Custodian is responsible for the compliance test and registration activities.

The test facility is tasked by the Custodian to provide test tools, test samples, and test plans. Once these items are reviewed and approved by the STANAG 4607 Custodian, the test facility will be tasked to conduct the tests.

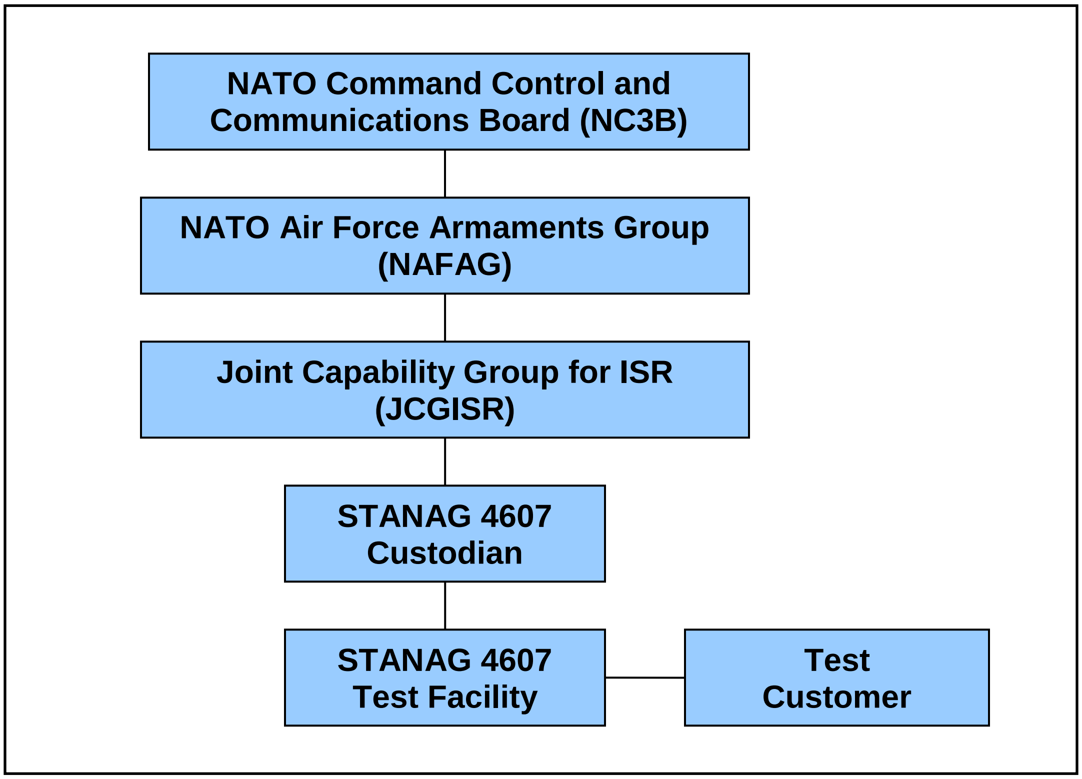

Figure G.1 STANAG 4607 Test Program Organizational Relationships

G.4 Testing Policies

G.4.1 Document Validation Test Policies

Test tools and test data developed during the test and validation process will reveal inconsistencies in the standard and the implementation guide and contribute to the validation of the STANAG 4607. Findings from the test and validation process will be reported to the Custodian for further consideration.

G.4.2 Compliance Test Policies

In accordance with the NIIA Compliance Test Policies in AEDP-2, the principal purpose of compliance testing is to assess the degree to which the external behaviour of a system or implementation conforms to the STANAG 4607 standard and implementation guide. An implementation can be understood as a system, a system component (hardware and or software), or a product under test. The principal benefit of compliance testing is that the performance of each implementation under test is tested in an isolated situation against a validated standard, allowing for the identification of implementation failures and standards/specification violations. The following policies apply to tests conducted to verify compliance with specific standards:

- The Custodian of STANAG 4607 is responsible for managing the compliance testing.
- All tests will be conducted by accredited, independent organizations with no vested interest in the successful completion of the tests.
- Tests will be conducted using pre-defined test criteria and procedures available to all parties.
- A record of discrepancies will be provided to the test sponsor and developer and will be maintained by the test facility for future reference. This record will include, as a minimum, a detailed description of the discrepancy, the impact of the discrepancy on the user community and interoperability, and a recommendation on resolution.
- A test report will be generated which documents the tests conducted, the discrepancies found and the status of each, and the specific implementation tested.
- All successfully completed tests will be identified to the Custodian of STANAG 4607, who will maintain a registry of the successfully completed tests.

G.4.3 Interoperability Test Policies

In accordance with the NIIA Interoperability Test Policies in Vol. 2 of AEDP-2, interoperability testing assesses the operations of an implementation with GMTI systems performing the same or complementary operational functions. For GMTI, this will include both GMTI-producing and GMTI-using systems. Interoperability testing is an evaluation that assesses the overall capability and behaviour of a complete system in an operational environment using live and/or simulated or theoretical data, either in a fielded testing environment or in a developmental environment. The following policies apply to tests conducted to demonstrate interoperability:

- Interoperability tests and demonstrations will be managed by the Imagery Working Group (IMWG).
- The IMWG Chairman will identify a test manager for interoperability tests and demonstrations.
- Participating nations interested in having their products tested will provide national resources to the demonstration team to execute the interoperability tests and demonstrations.
- Tests will be conducted using predefined test criteria and procedures available to all parties.

- A record of discrepancies will be provided by the test facility to the GMTI system developers, test sponsor and developer and will be maintained by the IMWG for future reference.
- A final test report will be produced and provided through the Custodian to all participants.

G.4.4 Re-Testing Policy

In accordance with the NIIA Re-testing Policy in Vol. 2 of AEDP-2, the STANAG 4607 Custodian may direct implementation compliance retesting. Sponsors and/or developers may also request implementation retesting under conditions such as the following:

- Changes to the STANAG 4607 standard compliance requirements.
- Latent functional problems discovered with previously tested implementations.
- Any changes to a configuration-controlled item of a STANAG 4607 compliance tested implementation.
- The period for registration has elapsed.

G.4.5 Test Program Responsibilities

The NIIA Test Program described in Vol. 2 of AEDP-2, defines the test program responsibilities for the JCGISR, the STANAG 4607 Custodian, the IMWG Chairman, the NIIA test facilities, the test sponsor, and the STANAG 4607 implementation developers. Refer to Paragraph 2.3 of Annex B to Vol. 2 of AEDP-2 for additional details.

G.4.6 Additional Testing Opportunities

As described above, tests for compliance and interoperability will be conducted using pre-defined test criteria and procedures available to all parties. Test tools and test data can be made available for preparatory testing to allow industry to conduct preparatory tests. This approach allows for additional test time, reduces the risks to fail the test, increases the probability for successfully passing the tests and helps reduce overall testing costs. Industry is not committed to report on their findings during their preparatory testing. However, if they consider their findings to be relevant for a wider group, they can report their findings to the Custodian. Industry and nations are not committed to but are invited to share data samples and test data with other GMTI users. Multiple nations and the industries of multiple nations can also cooperate in conducting tests.

G.5 STANAG 4607 Test Criteria

Test and validation procedures are derived from the GMTIF packet components. GMTIF attributes, allowable field values, formats, and field lengths are fully described in this document and in the standard. Since the GMTIF is very flexible and has many options for implementation, the use of those options must be controlled if packet exchange interoperability is to be achieved. The procedures in this Annex identify the GMTIF features, capabilities, formats, field values, ranges, and associated boundary conditions against which an implementation is tested for compliance.

G.5.1 Pack/Unpack

For the purposes of this Annex, the term "pack" means to generate or construct a STANAG 4607 packet as either standalone or embedded within other ISR formats, as described in Annex B of this document, and to ensure that the file creation is within the set of conditions and constraints defined for compliance with the GMTIF. In this context, the term "unpack" means to interpret and properly display and/or present GMTIF data and associated information contained in a GMTIF packet. Depending on the fielding intent, an implementation may have a pack-only capability, an unpack-only capability, or have both a pack and unpack capability.

G.5.2 GMTIF Compliance Principles

The GMTIF compliance procedures contained herein are intended to strike a balance between fully implementing all the requirements in the GMTIF and the planned operational requirements of the actual system(s) implementing the STANAG. The cardinal principles are:

1) The packing/generating implementation shall ensure that all produced GMTIF packets are compliant and within the bounds of the STANAG. When the implementation also supports unpacking, it must at a minimum be capable of properly unpacking and presenting notional/visual GMTI information for any GMTIF packet that it is able to pack.
2) The unpacking/interpreting implementation shall ensure that the information from the GMTIF packet is presented to the receiving user as the originator intended.
3) When unpacking/interpreting a GMTIF packet with unrecognized content (e.g. content that cannot be properly interpreted or presented by the implementation, for example unsupported segments), if the application cannot handle the issue passively, the implementation shall have a means to alert the system operator or administrator that the packet(s) have unrecognized content in addition to what is being presented or interpreted in supported segments.

G.6 GMTIF Test Methodology

The test methodology uses a set of established subtests to address the capability of the Application Under Test (AUT) to unpack/interpret and/or pack/generate GMTIF- compliant data packets. The test cases identified in the subtests exercise the GMTIF compliance test criteria as established within this Annex. In addition, this Annex also establishes a Common Core Requirement (CCR) which all pack and/or unpack AUTs should support in order to promote a Minimum Implementation Capability (MIC) to foster interoperability.

G.6.1 Pack/Generate

The pack/generate portion of GMTIF compliance testing determines the degree to which a system can generate fully compliant GMTIF formatted packets. All GMTIF generate options presented or otherwise made available must result in the output of compliant GMTIF packets corresponding to the option(s) that were exercised. For generate testing, the sponsoring agency designates the specific GMTIF capabilities and features the AUT is required to support for generation of GMTIF packets in addition to the CCR. The AUT must demonstrate the capability to pack/generate GMTIF packets that exercise the required capabilities and features against the appropriate subtests. The AUT Developer/Sponsoring Agency should then evaluate the generated packets for compliance with the applicable portions of the GMTIF using automated test tools, visual inspection and other available GMTIF capable applications to evaluate both successful compliance and an MIC. In addition to being compliant, the generated packets must represent what the production process intended.

G.6.2 Unpack/Interpret

The unpack/interpret portion of GMTIF compliance testing determines the degree to which an AUT can properly interpret GMTIF formatted packets. Interpret applications, as a minimum, should be robust enough to unpack, interpret, and present the information of any GMTIF compliant packet as established for support by the CCR. Additionally, the unpack AUT should demonstrate:

1) The AUT can successfully handle any optional GMTIF features outside the established MIC core required for support as designated by the sponsoring agency.
2) Upon detecting an unsupported feature of a GMTIF packet, the AUT must at least alert the user of the event and provide an option to either abort the process or continue the unpack process. If the process is continued the AUT must unpack, interpret, and present the information for supported features.

3) Upon detecting a format error within the construct of a packet, the AUT must alert the user and abort the process without adversely disrupting the AUT operation (such as requiring a re-boot or re-initialization of the system).

G.6.3 Test Methodology

This test methodology is designed with the intent of providing a high level of confidence that an implementation demonstrating successful testing will be in compliance with supported features of the GMTIF. However, it is not feasible or cost effective to test all possible combinations or conditions that may occur during field operations. In recognition of these limitations, the compliance subtests exercise the Common Core Requirements (CCR) that all pack/unpack AUTs should support, along with optional features and unsupported/errored conditions. This will ensure a Minimum Implementation Capability (MIC) between implementing systems and also ensure that AUTs operations are not disrupted by unsupported/errored data packets. This test verifies the format and validates that the data contained in the GMTIF stream is accurate/valid and it is formatted in accordance with (IAW) STANAG 4607.

G.7 Common Core Requirement

To promote interoperability through a MIC, this Annex establishes a Common Core Requirement (CCR) for all GMTIF implementations to demonstrate. This CCR accounts for interfacing with less capable systems as well as with systems with bandwidth restrictions. Both pack/generate and unpack/interpret capable systems can optionally support boundaries beyond the CCR for interfacing with more capable systems and less restrictive bandwidths.

G.7.1 Pack/Generate

All pack/generate AUTs must, as a minimum, demonstrate that as production sources they can create products meeting the minimal production requirements established in the CCR.

G.7.2 Unpack/Interpret

All unpack/interpret AUTs must, as a minimum, demonstrate that they can successfully support the CCR to prompt a Minimum Implementation Capability (MIC). If a system implements a lesser capability and is unable to receive the GMTIF data needed to support an MIC, then that system could have compliance issues with STANAG 4607.

G.7.3 Minimum Implementation Capability (MIC)

In order to prompt interoperability, an AUT must demonstrate that it can support the MIC. The MIC is mostly based on features identified in the Data Exploitation Classes, Annex C of this document. The primary requirements of the MIC are:

1) Pack/Generate capable systems must be able to create packets that:

- are no greater than 65,535 Bytes, and optionally support larger GMTIF packets;
- only contain a single segment with a packet and segment header, and optionally support multi-segment packets; and
- as a minimum must support the following headers and segments:

  - Packet Header
  - Segment Header
  - Mission Segment
  - Dwell Segment
    Job Definition Segment

2) Unpack/Interpret capable systems must be able to unpack, interpret, and present the information for GMTIF packets that:

- are no greater than 65,535 Bytes and optionally support larger GMTIF packets;
- only contain a single segment with a packet and segment header, and optionally support multi-segment packets; and
- as a minimum must support the following segments:

  - Packet Header
  - Segment Header
  - Mission Segment
  - Dwell Segment
  - Job Definition Segment

G.8 Test Structure

The test structure consists of 20 subtests, each of which tests a particular portion or feature of the STANAG.

G.9 Subtests

Each subtest is comprised of unique criteria as listed in that subtest. For additional clarification of data fields and allowed values in those fields, refer to Chapters 3 and 4 of the standard as related to the subtests. Relevant portions of STANAG 4607 also include the character sets specified in Annex A of the standard and the Data Conventions described in Section C-4 to Annex C of the standard. The subtests are summarized as follows:

1) Subtest 1: GMTIF Packet Structure.
2) Subtests 2-17: GMTIF File Format. These subtests evaluate the compliance criteria for generating GMTIF Packets and interpreting and presenting GMTIF Packets.
3) Subtest 18: Packet Error Handling/Prevention. This subtest evaluates the application's ability to handle GMTIF packets containing format errors or unknown data types. It also evaluates the ability of the application to prevent generation of non-compliant packets.
4) Subtest 19: Embedding GMTI in STANAG 4545 and MIL-STD-2500C files.
5) Subtest 20: Embedding GMTI in STANAG 7023 files.

G.9.1 SUBTEST 01, GMTIF PACKET STRUCTURE – GENERAL

1) Objective

   - Determine to what extent the application can interpret and/or generate packets containing a valid packet header, with segment header(s) and segment(s) field data. The GMTIF packet must be constructed in accordance with the following criteria:

2) Criteria

   - Data Segment(s) are placed following the GMTIF Packet Header.
   - Each included Segment has a Segment Header preceding the Data Segment.
   - For compliance to the Common Core Requirements (CCR) all applications must demonstrate the capability of unpacking/interpreting and/or packing/generating single segment packets. The system may optionally support multi-segment packets.
   - For compliance to the CCR all unpacking/interpreting applications must demonstrate the capability to present the information from GMTIF packets up to 65,535 Bytes and optional support of larger GMTIF packets.

- For compliance to the CCR all packing/generating applications must demonstrate the capability to create GMTIF packets of no greater than 65,535 Bytes and optional support of larger GMTIF packets.

- The following Segments are required for support of the CCR

  - Packet Header
  - Segment Header
  - Mission Segment
  - Dwell Segment
  - Job Definition Segment

- Applications may optionally support the following Segments:

  - Free Text Segment
  - Test and Status Segment
  - Processing History Segment
  - Platform Location Segment
  - Job Request Segment
  - Job Acknowledge Segment
  - HRR Segment

- Both interpreting and generating applications must support the three Exploitation Classes as defined in Annex C of this document.

G.9.2 SUBTEST 02, PACKET HEADER

1) Objective

- Determine to what extent the GMTIF application can interpret packets containing valid Packet Header data.
- Determine to what extent the GMTIF application can generate and provide packets containing valid Packet Header data.

2) Criteria

The Packet Header is sent at the beginning of each packet and provides basic information concerning the platform, the job, the mission, nationality, security and the length of the packet (in Bytes). Unless otherwise noted or clarified in the associated criteria listed below, the criteria are as specified in Table G-1. (Note that Table G-1 correlates to Table 3-1 in Chapter 3 of the standard.)

- Both interpreting and generating applications must support the Packet Header.
- When generating a GMTIF Packet, a Packet Header must be placed at the beginning of each packet.
- The internal Packet size will be the sum of the packet header (32 Bytes), each individual segment header (5 Bytes) and each individual segment (size varies by segment and include segment fields) that are contained within the packet. Additionally, the header Packet Size must match the external packet size as stored on media.

Table G-1. Packet Header

Field	Field Name		Bytes	Form	Comment and/or Value Range	Type*
P1	Version ID		2	A	20	M
P2	Packet Size		4	I32	0 (0x00000020) to 4294967295 (0xFFFFFFFF)	M
P3	Nationality		2	A	A digraph, in accordance with Table 3-3 of the standard, which identifies the nationality of the platform providing the GMTI data, or XN for a NATO platform.	M
P4	Packet Security	Classification and/or Marking	1	E8	• 0x01 Top Secret • 0x02 Secret • 0x03 Confidential • 0x04 Restricted • 0x05 Unclassified • 0x06 No Classification	M
P5	Packet Security	Class. System and/or Marking	2	A	A digraph, in accordance with Table 3-3 of the standard, which identifies the national or multinational security system to which the Security Classification and/or marking in Field P4 conforms, or XN for a NATO security systems. Other codes shall be as registered with the Custodian.	M

Field	Field Name		Bytes	Form	Comment and/or Value Range	Type*
P6		Code	2	FL	• 0x0000 NONE (NO-STATEMENT VALUE) • 0x0001 NOCONTRACT • 0x0002 ORCON • 0x0004 PROPIN • 0x0008 WNINTEL • 0x0010 NATIONAL ONLY • 0x0020 LIMDIS • 0x0040 FOUO • 0x0080 EFTO • 0x0100 LIM OFF USE (UNCLAS) • 0x0200 NONCOMPARTMENT • 0x0400 SPECIAL CONTROL • 0x0800 SPECIAL INTEL • 0x1000 WARNING NOTICE – SECURITY CLASSIFICATION IS BASED ON THE FACT OF EXISTENCE AND AVAIL OF THIS DATA • 0x2000 REL NATO • 0x4000 REL 4-EYES • 0x8000 REL 9-EYES	M
P7	Exercise Indicator		1	E8	• 0x00 Operation, Real Data • 0x01 Operation, Simulated Data • 0x02 Operation, Synthesized Data • 0x80 Exercise, Real Data • 0x81 Exercise, Simulated Data • 0x82 Exercise Synthesized Data	M
P8	Platform ID		10	A	• For aircraft shall be tail number • For satellite shall be the satellite name with an appropriate numerical designator • Note: Unused Bytes are filled with “Space” characters.	M
P9	Mission ID		4	I32	A numerical value assigned by the platform identified in Field P8 that uniquely identifies the mission for the platform.	M
P10	Job ID		4	I32	• 0x00000000 indicates there is no reference to any specific request or task, and the packet can not contain Dwell, HRR, or Range-Doppler segments. • 0x00000001 to 0xFFFFFFFF A platform-assigned number identifying the specific request or task to which the packet pertains. The Job ID shall be unique within a mission.	M

* Type: Mandatory (M) - must be present.

G.9.3 SUBTEST 03, SEGMENT HEADER

1) Objective

- Determine to what extent the GMTIF application can interpret packets containing properly formatted Segment Header(s) data fields.
- Determine to what extent the GMTIF application can properly create packets containing valid Segment Header(s).

2) Criteria

The Segment Header identifies the type of segment that follows along with the size of the combination of the Segment Header and associated Segment. Unless otherwise noted or clarified in the associated criteria listed below, the criteria are as specified in Table G-2. (Note that Table G-2 correlates to Table 3-6 in Chapter 3 of the standard.)

- Both interpreting and generating applications must support the Segment Header.
- When interpreting a Segment Header, the interpreter must recognize and interpret supported segment types as identified in the Segment Header and as a minimum must support the following segments:

    - Packet Header
    - Segment Header
    - Mission Segment
    - Dwell Segment
    - Job Definition Segment

- When generating a Segment Header the application properly populates the S1 field and as a minimum supports the following segments:

    - Packet Header
    - Segment Header
    - Mission Segment
    - Dwell Segment
    - Job Definition Segment

- Interpreting applications must support the ability to interpret GMTIF Packets that contain a single segment and may optionally support the interpretation of multi-segment Packets.

- Generating applications must support the ability to create GMTIF Packets that contain only a single segment and may optionally create Packets with multi-segments.
- The Segment Size will contain the sum of the number of Bytes in both the Segment Header (5 Bytes) and the individual segment (size varies by segment and includes segment fields) associated with the Segment Header, see Table G-2.
- The Segment Size field must be less than the Packet Size in the Packet Header. In the case of a single segment packet this difference will be 32 Bytes (i.e., the size of the Packet Header).

Table G-2. Segment Header

Field	Field Name	Bytes	Form	Comment and/or Value Range	Type*
S1	Segment Type	1	E8	Segments Required for Support • 0x01 (Mission Segment) • 0x02 (Dwell Segment) • 0x05 (Job Definition Segment) Segments That Are Optional for Support • 0x03 (HRR Segment) • 0x06 (Free Text Segment) • 0x0A (Test and Status Segment) • 0x0C (Processing History Segment) • 0x0D (Platform Location Segment) • 0x 65 (Job Request Segment) • 0x66 (Job Acknowledge Segment)	M
S2	Segment Size	4	I32	The value is based on the size of the following segment plus five Bytes for the Segment Header. (NOTE: The maximum value shall not exceed the maximum size designated in Field P2, Packet Size, of the Packet Header, minus the size of the Packet Header itself.)	M

* Type: Mandatory (M) - must be present.

G.9.4 SUBTEST 04, MISSION SEGMENT

1) Objective

- Determine to what extent the GMTIF application can interpret packets containing the proper Mission Segment(s).
- Determine to what extent the GMTIF application can properly create packets containing valid Mission Segment(s).

2) Criteria

The Mission Segment is mandatory provides information concerning the mission plan, the flight plan, the platform type and configuration, and reference time for the mission. Without the Mission Segment, the date and time of the GMTIF data is unknown. Unless otherwise noted or clarified in the associated criteria listed below, the criteria are as specified in Table G-3. (Note that Table G-3 correlates to Table 3-7 in Chapter 3 of the standard.)

- Both interpreting and generating applications must support the Mission Segment.
- The generating application will ensure that the Mission Plan is unique for all missions defined for the platform. The Mission Plan shall be created as follows:

  - For airborne platforms, the Mission Number from the Air Tasking Order (ATO) or an equivalent document.
  - For spaceborne platforms, the mission identifier or a suitable designator such as “yymmhhnn”, where yy (year), mm (month), and hh (hour) indicate the time the collection mission began, and nn is the identifying number of the satellite.
  - For ground-based platforms, the Mission Number from the Air Tasking Order (ATO) or an equivalent document.

- The generating application will ensure that the flight plan has a unique value if one is assigned. If no flight plan is assigned, the application will populate the field with BCS space characters (hex 0x20).
- The generating application when creating the Reference Time will:

  - For airborne platforms, use the takeoff time.
  - For spaceborne platforms, use the epoch time.
  - For ground-based platforms, use a time reference suitable for collection.

- The generating application will either populate the Platform Configuration with additional sensor information or, if no addition information is available, will populate the field with BCS space characters (hex 0x20).
- Interpreting applications must unpack, interpret and properly present the Mission Segment data for use by the user.
- The generating application shall send the Mission Segment at least once every 120 seconds.

Table G-3. Mission Segment

Field	Field Name		Bytes	Form	Comment and/or Value Range	Type*
M1	Mission Plan		12	A	Alphanumeric	M
M2	Flight Plan		12	A	Alphanumeric	M
M3	Platform Type		1	E8	• (0x00) Unidentified • (0x01) ACS • (0x02) ARL-M • (0x03) Sentinel *(was ASTOR)* • (0x04) Rotary Wing Radar *(was CRESO)* • (0x05) Global Hawk-Navy • (0x06) HORIZON • (0x07) E-8 (Joint STARS) • (0x08) P-3C • (0x09) Predator • (0x0A) RADARSAT2 • (0x0B) U-2 • (0x0C) E-10 *(was MC2A)* • (0x0D) UGS - Single • (0x0E) UGS - Cluster • (0x0F) Ground Based • (0x10) UAV-Army • (0x11) UAV-Marines • (0x12) UAV-Navy • (0x13) UAV-Air Force • (0x14) Global Hawk- Air Force • (0x15) Global Hawk-Australia • (0x16) Global Hawk-Germany • (0x17) Paul Revere • (0x18) Mariner UAV • (0x19) BAC-111 • (0x1A) Coyote • (0x1B) King Air • (0X1C) LiMIT • (0x1D) NRL NP-3B • (0x1E) SOSTAR-X • (0x1F) WatchKeeper • (0x20) AGS (A321) • (0x21) Stryker • (0x22) AGS (HALE UAV) • (0x23) SIDM • (0x24) Reaper • (0x25) Warrior A • (0x26) Warrior	M
M4	Platform Configuration		10	A	Alphanumeric	M
M5	Reference Time	Year	2	I16	Shall contain the year in which the mission originated in hexadecimal. • E.G. 2002 would be 0x07D2	M
M6		Month	1	I8	Shall contain the month in which the mission originated in hexadecimal. • Value range 0x01 to 0x0C	M
M7		Day	1	I8	Shall contain the day in which the mission originated in hexadecimal. • Value range 0x01 to 0x1F	M

* Type: Mandatory (M) - must be present.

G.9.5 SUBTEST 05, DWELL SEGMENT

1) Objective

- Determine to what extent the GMTIF application can interpret packets containing Dwell Segment(s).
- Determine to what extent the GMTIF application can properly create packets containing valid Dwell Segment(s).

2) Criteria

The Dwell Segment is mandatory and presents data pertinent to Moving Target Indicator (MTI) Targets. The Dwell Segment is a report on a grouping of zero or more target reports for which the sensor provides a single time, sensor position, reference position on the ground with simple estimates for the observed area at the reported time, and other pertinent data. Unless otherwise noted or clarified in the associated criteria listed below, the criteria are as specified in Table G-4. (Note that Table G-4 correlates to Table 3-9 in Chapter 3 of the standard.)

- The generating application must ensure that if a Job Definition Segment is included that it precedes the Dwell Segment.
- The generating application shall ensure a Dwell Segment be sent for each logical grouping of target reports.
- At a minimum, the generating application must ensure that the Existence Mask (D1), Revisit Index (D2), Dwell Index (D3), Last Dwell of Revisit (D4), Target Report Count (D5), Dwell Time (D6), Sensor Position Latitude (D7), Sensor Position Longitude (D8), Sensor Position Altitude (D9), Dwell Area Center Latitude (D24), Dwell Area Center Longitude (D25), Dwell Area Range Half Extent (D26) and Dwell Area Dwell Angle Half Extent (D27) fields are populated.
- The generating application shall demonstrate the creation and transmission of a Dwell Segment even if no targets are observed.
- The generating application must ensure that the Existence Mask is the first field of the Dwell Segment and that the Dwell Segment immediately follows the Segment Header.
- The generating application must fill out the Existence Mask field such that the most-significant bit (7) of the high-order Byte (7) corresponds to the Revisit Index field immediately following the Existence Mask field. (Refer to Figure 3-1, Dwell Segment Existence Mask Mapping, of the standard for further detail.)

- The generating application must ensure a binary level “1” is present in the appropriate field of the Existence Mask field to indicate that the corresponding field in the Dwell Segment is present within the data steam.
- The generating application must ensure a binary level “0” is present in the appropriate field of the Existence Mask field to indicate that the corresponding field in the Dwell Segment is not present in the data steam. Additionally, the generating application will ensure that spare fields are populated with a binary level “0”.
- The generating application must ensure that a binary level “1” is present along with associated field data for all created Dwell Segment(s) for the following mandatory fields: D2, D3, D4, D5, D6, D7, D8, D9, D24, D25, D26 and D27.
- The generating application will set the Revisit Index for the first visit to “0” and increment the Revisit Index by one for each subsequent visit of the same bounding area as given in the Job ID. The Revisit Index will wrap when the allowable range of the revisits is exceeded.
- The generating application will set the Dwell Index to “0” for the first visit and increment each time the Revisit Index wraps.
- The generating application will set the Last Dwell Index to “0” for the initial visit and will continue to set the Last Dwell Index to “0” until the last visit of the Dwell, at which time the Last Dwell Index will be set to “1”.
- The generating application will populate the Target Report Count with the total number of target reports during this Dwell and send the reports as part of this Dwell Segment in field D32.
- The generating application will populate the Dwell Time with the elapsed time expressed in milliseconds from the midnight at the beginning of the day specified in the Reference Time fields of the Mission Segment to the temporal center of the dwell.
- The generating application will populate the Sensor Position fields for Latitude, Longitude and Altitude of the sensor for the temporal center of the dwell.
- The generating application as a minimum must support from 0 to 120 Target Reports, and optionally support greater than 120 Target Reports.
- The generating application will not mix radar modes or processors in a single dwell segment; each separate mode or process will be reported in a separate Dwell Segment.
- The interpret application must unpack, interpret and properly present the Dwell Segment data for use by the application.
- The interpret application as a minimum must support up to 120 Target Reports, and optionally support greater than 120 Target Reports.
- Refer to Table B-1of Annex B of this document for the minimum set of unpack/interpret and pack/generate fields recommended for GMTI data.

Table G-4. Dwell Segment

<table>
<tr><th>Field</th><th colspan="2">Field Name</th><th>Bytes</th><th>Form</th><th>Comment and/or Value Range</th><th>Type*</th></tr>
<tr><td>D1</td><td colspan="2">Existence Mask</td><td>8</td><td>FL64</td><td>See Figure 3-1 Dwell Segment Existence Mask Mapping of the standard for allowed mask values.</td><td>M</td></tr>
<tr><td>D2</td><td colspan="2">Revisit Index</td><td>2</td><td>I16</td><td>0 (0x0000) to 65535 (0xFFFF)</td><td>M</td></tr>
<tr><td>D3</td><td colspan="2">Dwell Index</td><td>2</td><td>I16</td><td>0 (0x0000) to 65535 (0xFFFF)</td><td>M</td></tr>
<tr><td>D4</td><td colspan="2">Last Dwell of Revisit</td><td>1</td><td>FL8</td><td>0 (0x00) or 1 (0x01)</td><td>M</td></tr>
<tr><td>D5</td><td colspan="2">Target Report Count</td><td>2</td><td>I16</td><td>This field will be populated with the total number of targets reports during this Dwell and sent as part of this Dwell Segment in field D5.
• 0 (0x0000) to 65535 (0xFFFF)</td><td>M</td></tr>
<tr><td>D6</td><td colspan="2">Dwell Time</td><td>4</td><td>I32</td><td>0 (0x00000000) to 4 x (10^9) (0xEE6B2800)</td><td>M</td></tr>
<tr><td>D7</td><td rowspan="3">Sensor Position</td><td>Latitude</td><td>4</td><td>SA32</td><td>Expressed as degrees North (positive) of South (negative) of the Equator.
• - 90 to +89.999999958
• See subsection 3.4.7 of the standard</td><td>M</td></tr>
<tr><td>D8</td><td>Longitude</td><td>4</td><td>BA32</td><td>Expressed as degrees East (positive) from the Prime Meridian.
• 0 to +359.999999916
• See subsection 3.4.8 of the standard</td><td>M</td></tr>
<tr><td>D9</td><td>Altitude</td><td>4</td><td>S32</td><td>Referenced to its position above the WGS 84 ellipsoid, expressed in centimeters.
• -50000 (0x 4000C350) to +2 billion (0x77359400)</td><td>M</td></tr>
<tr><td>D10</td><td rowspan="2">Scale Factor</td><td>Lat Scale</td><td>4</td><td>SA32</td><td>The Latitude Scale factor and Delta Latitude are used in conjunction with the Dwell Area Center Latitude (field 24) to recover the target latitude as follows:
Latitude = [(D32.4) x (D10) + (D24)]
Only allowed if fields D32.4 and D32.5 are present.
• See subsection 3.4.10 of the standard</td><td>C</td></tr>
<tr><td>D11</td><td>Long Scale</td><td>4</td><td>BA32</td><td>The Longitude Scale factor and Delta Longitude are used in conjunction with the Dwell Area Center Longitude (field 24) to recover the target longitude as follows:
Latitude = [(D32.5) x (D11) + (D25)]
Only allowed if fields D32.4 and D32.5 are present.
• See subsection 3.4.11</td><td>C</td></tr>
<tr><td>D12</td><td>Sensor Position Uncertainty (one standard deviation)</td><td>Along Track</td><td>4</td><td>I32</td><td>Estimate of the standard deviation in the estimated horizontal sensor location at the time of the dwell, measured along the sensor track direction (D15), expressed in centimeters.
• 0 (0x00000000) to 1,000,000 (000F4240)</td><td>O</td></tr>
</table>

Table G-4. Dwell Segment

Field	Field Name		Bytes	Form	Comment and/or Value Range	Type*
D13		Cross Track	4	I32	Estimate of the standard deviation in the estimated horizontal sensor location at the time of the dwell, measured orthogonal to the track direction (D15), expressed in centimeters. • 0 (0x00000000) to 1,000,000 (000F4240)	O
D14		Altitude	2	I16	The standard deviation of the sensor altitude estimate (D15), expressed in centimeters. • 0 (0x0000) to 65,535 (0x0000FFFF)	O
D15	Sensor Track		2	BA16	The ground track of the sensor at the time of the dwell, expressed as the angle in degrees (clockwise) from True North. • 0 to 359.9945 • See subsection 3.4.15 of the standard This field is only provided when the sensor system provides the parameter.	C
D16	Sensor Speed		4	I32	The ground speed of the sensor at the time of the dwell, expressed as millimeters per second. • 0 (0x00000000) to 8,000,000 (0x007A1200) This field is only provided when the sensor system provides the parameter.	C
D17	Sensor Vertical Velocity		1	S8	The velocity of the sensor in the vertical direction, expressed as decimeters per second. • -128 (0x80) to +127 (0x7F) • See subsection 3.4.17 of the standard This field is only provided when the sensor system provides the parameter.	C
D18	Sensor Track Uncertainty		1	I8	The standard deviation of the estimate of the sensor track along the ground, expressed in degrees. • 0 (0x00) to 45 (0x2D)	O
D19	Sensor Speed Uncertainty		2	I16	The standard deviation of the estimate of the sensor speed, expressed in millimeters per second. • 0 (0x0000) to 65535 (0xFFFF)	O
D20	Sensor Vertical Velocity Uncertainty		2	I16	The standard deviation of the estimate of the vertical velocity, expressed in centimeters per second. • 0 (0x0000) to 65535 (0xFFFF)	O
D21	Platform Orientation See Figure 3-3 of the standard	Heading	2	BA16	The heading of the platform at the time of the dwell, expressed as the angle in degrees (clockwise) from True North to the roll axis of the platform. • 0 to 359.9945 • See subsection 3.4.21 of the standard This field is only provided when the sensor system provides the parameter.	C

Table G-4. Dwell Segment

Field	Field Name		Bytes	Form	Comment and/or Value Range	Type*
D22		Pitch	2	SA16	The pitch angle of the platform at the time of the dwell, expressed as the angle in the degrees of the rotation of the platform about its pitch axis. • -90 to +89.9973 • See subsection 3.4.22 of the standard This field is only provided when the sensor system provides the parameter.	C
D23		Roll (Bank Angle)	2	SA16	The roll angle of the platform at the time of the dwell, expressed as the angle in degrees of the rotation of the platform about its roll axis. • -90 to +89.9973 • See subsection 3.4.23 This field is only provided when the sensor system provides the parameter.	C
D24	Dwell Area	Center Latitude	4	SA32	The North-South position of the center of the dwell area, expressed as degrees North (positive) or South (negative) of the Equator. • - 90 to + 89.999989 • See subsection 3.4.24 of the standard	M
D25		Center Longitude	4	BA32	The East-West position of the center of the dwell area, expressed as degrees East (positive) of the Prime Meridian. • 0 to +359.999979 • See subsection 3.4.25 of the standard	M
D26		Range Half Extent	2	B16	The distance on the earth surface, expressed in kilometers, from the near edge to the center of the dwell area. • 0 to 255.9928 • See subsection 3.4.26 of the standard	M
D27		Dwell Angle Half Extent	2	B16	For dwell based radars, one-half of the 3-dB beamwidth, expressed in degrees. For non-dwell based radars, the angle between the beginning of the dwell to the center of the dwell, as measured from the sensor's position. • 0 to 359.9945 • See subsection 3.4.26 of the standard	M
D28	Sensor Orientation	Heading	2	BA16	The rotation of the sensor broadside face about the local vertical axis of the platform, expressed in degrees clockwise when viewed from above. • 0 to 359.9945 • See subsection 3.4.28 of the standard	O
D29		Pitch	2	SA16	The rotation angle of the sensor normal about the lateral axis of the sensor broadside, which is pointing in the direction defined by the sensor orientation-heading angle. It is expressed in degrees, where an angle above the horizontal is positive. • -90 to +89.9973 • See subsection 3.4.29 of the standard	O

Table G-4. Dwell Segment

Field	Field Name		Bytes	Form	Comment and/or Value Range	Type*
D30		Roll	2	SA16	The rotation angle of the sensor about the transverse axis of the sensor broadside, which is pointing in the direction defined by the sensor orientation-heading angle. It is expressed in degrees, where a clockwise rotation is positive, as seen from behind the face of the sensor. • -90 to +89.9973 • See subsection 3.4.30 of the standard	O
D31	Minimum Detectable Velocity, MDV		1	I8	The minimum velocity component, along the line of sight, which can be detected by the sensor; expressed in decimeters per second. • 0 (0x00) to 255 (0xFF)	O
D32	< Target Reports >				Note: The following will be repeated for each Target Report.	
D32.1	MTI Report Index		2	I16	The sequential count of this MTI report within the dwell. For associated HRR reports this field is required. • 0 (0x0000) to 65535 (0xFFFF)	C
D32.2	Target Location	Hi-Res Latitude	4	SA32	The North-South position of the reported detection, expressed as degrees North (positive) or South (negative) of the Equator. • -90 to +89.999999958 • See subsection 3.4.32.2 of the standard Note: If fields D32.2 and D32.3 are sent, then fields D32.4 and D32.5 are not sent.	C
D32.3	Target Location	Hi-Res Longitude	4	BA32	The East-West position of the reported detection, expressed as degrees East (positive) from the Prime Meridian. • 0 to +359.999999916 • subsection 3.4.32.3 of the standard Note: If fields D32.2 and D32.3 are sent, then fields D32.4 and D32.5 are not sent.	C
D32.4	Target Location	Delta Lat	2	S16	The North-South position of the reported detection, expressed as degrees North (positive) or South (negative) from the Dwell Area Center Latitude (the Reference Point) sent in (D24). • -32768 to + 32767 • See subsection 3.4.32.4 of the standard Note: If fields D32.4 and D32.5 are sent, then fields D32.2 and D32.3 are not sent.	C
D32.5	Target Location	Delta Long	2	S16	The East-West position of the reported detection, expressed as degrees East (positive) from the Dwell Area Center Longitude (the Reference Point) sent in (D25). • -32768 to + 32767 • See subsection 3.4.32.5 of the standard Note: If fields D32.4 and D32.5 are sent, then fields D32.2 and D32.3 are not sent.	C

Table G-4. Dwell Segment

Field	Field Name		Bytes	Form	Comment and/or Value Range	Type*
D32.6		Geodetic Height	2	S16	The height of the reported detection, referenced to its position above the WGS 84 ellipsoid, expressed in meters. • -1000 to +32767 • See subsection 3.4.32.6 of the standard	O
D32.7	Target Velocity Line-of-Sight Component (Radial Velocity)		2	S16	The component of velocity for the reported detection, expressed as centimeters per second. • -32768 to +32767, where + means increasing range away from the sensor • See subsection 3.4.32.7 of the standard	O
D32.8	Target Wrap Velocity		2	I16	For most radars this is calculable as the effective PRF multiplied by the effective sensor wavelength divided by four, and expressed as centimeters per second. • 0 (0x0000) to 65535 (0xFFFF)	O
D32.9	Target SNR		1	S8	Estimated signal-to-noise ratio (SNR) of the target return, expressed in decibels. • -127 to +127 • See subsection 3.4.32.9 of the standard	O
D32.10	Target Classification		1	E8	• (0x00) No Information, Live Target • (0x01) Tracked Vehicle, Live Target • (0x02) Wheeled Vehicle, Live Target • (0x03) Rotary Wing Aircraft, Live Target • (0x04) Fixed Wing Aircraft, Live Target • (0x05) Stationary Rotator, Live Target • (0x06) Maritime, Live Target • (0x07) Beacon, Live Target • (0x08) Amphibious, Live Target • (0x7E) Other, Live Target • (0x7F) Unknown, Live Target • (0x80) No Information, Simulated Target • (0x81) Tracked Vehicle, Simulated Target • (0x82) Wheeled Vehicle, Simulated Target • (0x83) Rotary Wing Aircraft, Simulated Target	O
D32.10	Target Classification		1	E8	• (0x84) Fixed Wing Aircraft, Simulated Target • (0x85) Stationary Rotator, Simulated Target • (0x86) Maritime, Simulated Target • (0x87) Beacon, Simulated Target • (0x88) Amphibious, Simulated Target • (0xFE) Other, Simulated Target • (0xFF) Unknown, Simulated Target	O
D32.11	Target Class Probability		1	I8	The estimated probability that the target classification appearing in D32.10 is correctly classified. • 0 (0x00) to 100 (0x64)	O

Table G-4. Dwell Segment

Field	Field Name		Bytes	Form	Comment and/or Value Range	Type*
D32.12	Target Measurement Uncertainty (One standard Deviation)	Slant Range	2	I16	The standard deviation of the estimated slant rage of the reported detection, expressed in centimeters. • 0 (0x0000) to 65535 (0xFFFF) Fields D12, D13 and D14 of the must be sent for this field to be present.	C
D32.13		Cross Range	2	I16	The standard deviation of the position estimate, in the cross-range direction, of the reported detection, expressed in decimeters. • 0 (0x0000) to 65535 (0xFFFF) Fields D12, D13 and D14 of the Dwell Segment must be sent for this field to be present.	C
D32.14		Height	1	I8	The standard deviation of the estimated geodetic height reported in D32.6 expressed in meters. • 0 (0x00) to 255 (0xFF) Fields D12, D13 and D14 of the Dwell Segment must be sent for this field to be present.	C
D32.15		Target Radial Velocity	2	I16	The standard deviation of the measured line-of-sight velocity component reported in D32.7, expressed in centimeters per second. • 0 (0x0000) to 5000 (0x1388) Fields D12, D13 and D14 of the Dwell Segment must be sent for this field to be present.	C
D32.16	Truth Tag	Application	1	I8	The Entity State Protocol Data Unit (PDU) used to generate the MTI Target, truncated to 8 bits. • 0 (0x00), 1 (0x01) to 255 (0xFF) Only sent for simulated Targets.	C
D32.17		Entity	4	I32	The Entity State PDU used to generate the MTI Target. • 0 (0x00000000), 1 (0x00000001) to (0xFFFFFFFF) 4294967295 Only sent for simulated Targets.	C

* Type: Mandatory (M) - must be present, Optional (O) - may or may not be present, Conditional (C) - if flagged by another associated field will be present.

G.9.6 SUBTEST 06, HIGH-RANGE RESOLUTION (HRR) SEGMENT

1) Objective

- Determine to what extent the GMTIF application can interpret packets containing HRR Segment(s).
- Determine to what extent the GMTIF application can properly create packets containing valid HRR Segment(s).

2) Criteria

The HRR Segment provides data on High-Range Resolution measurements, which may be performed in conjunction with MTI detections. It includes HRR Scatterer Data pertaining to the HRR measurements and additional data that can be used for High-Range Resolution Inverse Synthetic Array Radar (ISAR) targets. Unless otherwise noted or clarified in the associated criteria listed below, the criteria are as specified in Table G-5. (Note that Table G-5 correlates to Table 3-12 in Chapter 3 of the standard.)

- The generating application will set the Revisit Index for the first visit to "0" and increment the Revisit Index by one for each subsequent visit of the same bounding area as given in the Job ID. The Revisit Index will wrap when the allowable range of the revisits is exceeded.
- The generating application will set the Dwell Index to "0" for the first visit and increment each time the Revisit Index wraps.
- The generating application will set the Last Dwell Index to "0" for the initial visit and will continue to set the Last Dwell Index to "0" until the last visit of the Dwell, at which time the Last Dwell Index will be set to "1".
- The generating application will set the MTI Report Index to the associated MTI Report Index in the Dwell Segment (D32.1).
- For minimum required field support for both unpack/interpret and pack/generate, refer to Table C-5 of Annex C to this document.

Table G-5. High-Range Resolution Segment

Field	Field Name	Bytes	Form	Comment and/or Value Range	Type*
H1	Revisit Index.	2	I16	0 (0x0000) to 65535 (0xFFFF)	
H2	Dwell Index.	2	I16	0 (0x0000) to 65535 (0xFFFF)	
H3	Last Dwell of Revisit	1	FL8	0 (0x00), 1 (0x01)	
H4	MTI Report Index	2	I16	Must match the MTI Report Index in the Dwell Segment for an HHR Report. • 0 (0x0000) to 65535 (0xFFFF)	
H5	Number of Target Scatterers	2	I16	Number of Range Doppler pixels that exceed target scatterer threshold and are reported in this segment. • 0 (0x0000) to 65535 (0xFFFF)	
H6	Number of Dopplers	2	I16	Number of Doppler bins in a Range-Doppler chip. • 0 (0x0000) to 65535 (0xFFFF)	
H7	Mean Clutter Power relative to peak scatterer	1	I8	The value is calculated by: (a) converting the Mean Clutter Power Relative to the Peak Scatterer to decibels (dB), with the maximum value constrained to 63.75 DB; (b) multiplying that value by 4; and (c) rounding to nearest integer.	

Table G-5. High-Range Resolution Segment

Field	Field Name	Bytes	Form	Comment and/or Value Range	Type*
				• 0 (0x00) to 255 (0xFF) E.G. a value of 0 db = 0 or (0x00) E.G. a value of 28.7 dB = 115 or (0x73) E.G. a value of 63.75 dB = 255 or (0xFF)	
H8	Detection Threshold Relative To peak scatterer	1	I8	The value is calculated by: (a) converting the Detection Threshold Relative to the Peak Scatterer to decibels (dB), with the maximum value constrained to 63.75 DB; (b) multiplying that value by 4; and (c) rounding to nearest integer. • 0 (0x00) to 255 (0xFF) E.G. a value of 0 db = 0 or (0x00) E.G. a value of 28.7 dB = 115 or (0x73) E.G. a value of 63.75 dB = 255 or (0xFF)	M
H9	Range resolution	1	I8	3dB range impulse response of the radar, expressed in centimeters. • 0 (0x00) = No Statement • 1 (0x01) to 255 (0xFF)	M
H10	Range Bin Spacing	1	I8	Range pixel spacing after over sampling, expressed in centimeters. • 1 (0x01) to 255 (0xFF)	M
H11	Doppler Resolution	3	B24	3dB Doppler resolution of the radar, expressed in Hertz. • 0 = No Statement • .0000305 to 255 • See subsection 3.5.13 of the standard	M
H12	Doppler Bin Spacing	3	B24	Doppler pixel spacing after over sampling, expressed in Hertz. • . 0000305 to 255 • See subsection 3.5.14 of the standard	M
H13	Compression Flag	1	E8	Compression technique used: • 0 = No Compression • 1 = Threshold Decomposition (x10)	M
H14	Range Weighting Function Type	1	E8	Weighting used in the range compression process: • 0 = No Statement • 1 = Taylor Weighting • 2 = Other	M
H15	Doppler Weighting Function Type	1	E8	Weighting used in the cross- range or Doppler compression process: • 0 = No Statement • 1 = Taylor Weighting • 2 = Other	M
H16	Maximum Pixel Power	1	I8	The initial power of the peak scatterer, expressed in dB/2. The value is calculated by: (a) converting the Maximum Pixel Power to decibels (dB), with the maximum value constrained to 127.5 DB; (b) multiplying that value by 2; and (c) rounding to nearest integer. • 0 (0x00) to 255 (0xFF) E.G. a value of 0 db = 0 or (0x00) E.G. a value of 28.7 dB = 57.4 or (0x39) E.G. a value of 127.5 dB = 255 or (0xFF)	M

Table G-5. High-Range Resolution Segment

Field	Field Name	Bytes	Form	Comment and/or Value Range	Type*
H17	<HRR Scatterer Records>			Note: The following will be repeated for each Scatterer Record.	
H17.1	Scatterer Magnitude	1	I8	Scatterer's power magnitude, quantized to 1 Byte, normalized to peak scatterer, and expressed in quarter-decibels (dB/4). The value is calculated by: (a) converting the Scatterer Magnitude to decibels (dB), with the maximum value constrained to 63.75 DB; (b) multiplying that value by 4; and (c) rounding to nearest integer. • 0 (0x00) to 255 (0xFF) E.G. a value of 0 db = 0 or (0x00) E.G. a value of 28.7 dB = 115 or (0x73) E.G. a value of 63.75 dB = 255 or (0xFF)	M
H17.2	Scatterer Phase	1	I8	Scatterer's complex phase in degrees, quantized to 1 Byte, and expressed as a quantized rotation in units of 2*pi/256. • 0 (0x00) to 255 (0xFF)	M
H17.3	Range Index	2	I16	Scatterer's Range index relative to Range-Doppler chip, where increasing index equates to increasing range. • 0 (0x0000) to 65,535 (0xFFFF)	M
H17.4	Doppler Index	2	I16	Scatterer's Doppler index relative to Range-Doppler chip, where increasing index equates to increasing Doppler. • 0 (0x0000) to 65,535 (0xFFFF)	M

* Type: Mandatory (M) - must be present.

Table G-6 below highlights the field status (mandatory or optional) for each type of HRR/RDM. (Note: Table G-6 correlates to Section 3.5.23 of the standard.)

Table G-6. High-Range Resolution Segment

	Conditional Field		
HRR/RDM Data Type	**H15**	**H21**	**H22**
1	O	O	O
2	M	O	O
3	O	O	O
4	M	M	M
5	M	O	O
6	M	M	M
7	M	O	O

G.9.7 SUBTEST 07, JOB DEFINITION SEGMENT

1) Objective

- Determine to what extent the GMTIF application can interpret packets containing Job Definition Segment(s).
- Determine to what extent the GMTIF application can properly create packets containing valid Job Definition Segment(s).

2) Criteria

The Job Definition Segment is mandatory and provides a definition of the radar job performed by the sensor, including information pertaining to the geolocation model used in the sensor measurement. Unless otherwise noted or clarified in the associated criteria listed below, the criteria are as specified in Table G-7. (Note that Table G-7, G-7.1, and G-7.2 correlate to Tables 3-14, 3-16, and 3-17 respectively, in Chapter 3 of the standard.)

- The generating application shall send the Job Definition Segment before the first revisit of a job and shall send it at least every 30 seconds thereafter. This shall continue until the job is terminated.
- The generating application will populate the Sensor ID Type with a valid Sensor.
- The generating applications will ensure that for the valid Sensor assigned for the Sensor ID Type that a valid alphanumeric variant of the Sensor ID Type is assigned to the Sensor ID Model.
- The generating application will ensure that the Priority for the specified platform is unique, and ranges from 1 to 99 based on active tasking requests.

Table G-7. Job Definition Segment

Field	Field Name		Bytes	Form	Comment and/or Value Range	Type*
J1	Job ID		4	I32	A platform assigned number identifying the specific request or task to which the dwell pertains. 0 (0x00000001) to 4294967295 (0xFFFFFFFF)	M
J2	Sensor ID	Type	1	E8	Allowed Sensor Types: • 0, (0x00) = Unidentified • 1, (0x01) = Other • 2, (0x02) = HiSAR (ARL-M) • 3, (0x03) = ASTOR • 4, (0x04) = Rotary Wing Radar *(was CRESO)* • 5, (0x05) = Global Hawk Sensor • 6, (0x06) = HORIZON • 7, (0x07) = APY-3 • 8, (0x08) = APY-6 • 9, (0x09) = APY-8 (Lynx I) • 10, (0x0A) = RADARSAT2 • 11, (0x0B) = ASARS-2A • 12, (0x0C) = TESAR • 13, (0x0D) = MP-RTIP • 14, (0x0E) = APG-77 • 15, (0x0F) = APG-79 • 16, (0x10) = APG-81 • 17, (0x11) = APY-6v1 • 18, (0x12) = DPY-1 (Lynx II) • 19, (0x13) = SIDM • 20, (0x14) = LIMIT • 21, (0x15) = TCAR (AGS A321) • 22, (0x16) = LSRS Sensor • 23, (0x17) = UGS Single Sensor • 24, (0x18) = UGS Cluster Sensor • 255, (0xFF) = No Statement	M
J3		Model	6	A	An alphanumeric field identifying the particular variant of the sensor type.	M
J4	Target Filtering Flag		1	FL8	Current allowed Target Filtering Flags: • (0x00) = Indicates that no filtering has been applied to the targets. • (0x01) = Indicates that area filtering within the intersection of the Dwell Area and the Bounding Area has been performed.	M
J5	Priority (Radar Priority)		1	I8	Specifies the priority of this tasking request relative to all other active tasking requests scheduled for execution on the specified platform. • 1 (0x00) to 99 (0x63) • 255 (0Xff) Note: 1 is highest and 99 is lowest priority. 255 indicates End of Job	M

J6	Bounding Area	Pt A Latitude	4	SA32	The North-South position of the first corner (Point A) defining the area for sensor service, expressed as degrees North (positive) or South (negative) of the Equator. • - 90 to + 89.999989 • See subsection 3.7.6 of the standard	M

Table G-7. Job Definition Segment (cont.)

Field	Field Name		Bytes	Form	Comment and/or Value Range	Type*
J7		Pt A Longitude	4	BA32	The East-West position of the first corner (Point A) defining the area for sensor service, expressed as degrees East (positive) of the Prime Meridian. • 0 to +359.999979See subsection 3.7.7 of the standard	M
J8		Pt B Latitude	4	SA32	The North-South position of the second corner (Point B) defining the area for sensor service, expressed as degrees North (positive) or South (negative) of the Equator. • - 90 to + 89.999989 • See subsection 3.7.8 of the standard	M
J9		Pt B Longitude	4	BA32	The East-West position of the second corner (Point B) defining the area for sensor service, expressed as degrees East (positive) of the Prime Meridian. • 0 to +359.999979 • See subsection 3.7.9 of the standard	M
J10		Pt C Latitude	4	SA32	The North-South position of the third corner (Point C) defining the area for sensor service, expressed as degrees North (positive) or South (negative) of the Equator. • - 90 to + 89.999989 • See subsection 3.7.10 of the standard	M
J11		Pt C Longitude	4	BA32	The East-West position of the third corner (Point C) defining the area for sensor service, expressed as degrees East (positive) of the Prime Meridian. • 0 to +359.999979 • See subsection 3.7.11 of the standard	M
J12		Pt D Latitude	4	SA32	The North-South position of the fourth corner (Point D) defining the area for sensor service, expressed as degrees North (positive) or South (negative) of the Equator. • - 90 to + 89.999989 • See subsection 3.7.12 of the standard	M
J13		Pt D Longitude	4	BA32	The East-West position of the fourth corner (Point D) defining the area for sensor service, expressed as degrees East (positive) of the Prime Meridian. • 0 to +359.999979 • See subsection 3.7.13 of the standard	M
J14	Radar Mode		1	E8	See Table G-7.1 for allowed Radar Modes.	M
J15	Nominal Revisit Interval		2	I16	Specifies the nominal revisit interval for the job ID, expressed in deciseconds.	M
J16	Nominal Sensor Position Uncertainty	Along Track	2	I16	Nominal estimate of the standard deviation in the estimated horizontal location, expressed in decimeters. • 0 (0x0000) to 10000 (0x2710) • 65535 (0xFFFF) = No Statement	M

Table G-7. Job Definition Segment (cont.)

Field	Field Name		Bytes	Form	Comment and/or Value Range	Type*
J17		Cross Track	2	I16	Nominal estimate of the standard deviation in the estimated horizontal sensor location, measured orthogonal to the track direction, expressed in decimeters. • 0 to 10000 (0x0000 to 0x2710) • 65535 (0xFFFF) = No Statement	M
J18		Altitude	2	I16	Nominal estimate of the standard deviation of the measured sensor altitude (D11), expressed in decimeters. • 0 to 20000 (0x0000 to 0x4E20) • 65535 (0xFFFF) = No Statement	M
J19		Track Heading	1	I8	Nominal standard deviation of the estimate of sensor tracking, expressed in degrees. • 0 to 45 (0x00 to 0x2D) • 255 (0xFF) = No Statement	M
J20		Sensor Speed	2	I16	Nominal standard deviation of the estimate of sensor speed, expressed in millimeters per second. • 0 to 65534 (0x0000 to 0xFFFE) • 65535 (0xFFFF) = No Statement	M
J21	Nominal Sensor Value	Slant Range Standard Deviation	2	I16	Nominal standard deviation of the slant range of the reported detection, expressed in meters. • 0 to 65534 (0x0000 to 0xFFFE) • 65535 (0xFFFF) = No Statement	M
J22		Cross Range Standard Deviation	2	B16	Nominal standard deviation of the measured cross-angle to the reported detection, expressed in degrees as a 16-bit unsigned binary angle. • 0 to 179.9945 (0x0000 to 0x00B3) • >= 180 (0x00B4 to 0xFFFF) = No Statement	M
J23		Target Velocity Line-of-Sight Component Standard Deviation	2	I16	Nominal standard deviation of the velocity line-of-sight component reported in field (D32.7), expressed in centimeters per second. • 0 to 5000 (0x0000 to 0x1388) • 65535 (0xFFFF) = No Statement	M
J24		MDV	1	I8	Nominal minimum velocity component along the line of sight, which can be detected by the sensor, expressed in decimeters per second. • 0 to 254 (0x00 to 0xFE) • 255 (0xFF) = No Statement	M
J25		Detection Probability	1	I8	Nominal probability that an unobscured ten square-meter target will be detected within the given area of surveillance, assuming the Swerling model appropriate for the particular radar target. The No-Statement value is sent when the sensor is unable or unwilling to provide a value. • 0 to 100 (0x00 to 0x64) • 255 (0xFF) = No Statement	M

Table G-7. Job Definition Segment (cont.)

Field	Field Name		Bytes	Form	Comment and/or Value Range	Type*
J26		False Alarm Density	1	I8	The expected density of False Alarms (FA), expressed in decibels (dB). • 0 to 254 (0x00 to 0xFE) • 255 (0xFF) = No Statement	M
J27	Terrain Elevation Model Used		1	E8	See Table G-7.2 for allowed Terrain Elevation Models.	M
J28	Geoid Model Used		1	E8	Allowed Geoid Elevation Models: • 0 (0x00) = None Specified • 1 (0x01) = EGM96 • 2 (0x02) = GEO96 • 3 (0x03) = Flat Earth	M

* Type: Mandatory (M) - must be present.

Table G-7.1. Allowed Radar Modes

RADAR MODE	SYSTEM	VALUE	RADAR MODE	SYSTEM	VALUE
Unspecified Mode	Generic	0	EMTI Augmented Spot	ASARS-2	54
MTI (Moving target Indicator)	Generic	1	EMTI Wide Area MTI (WAMTI)	ASARS-2	55
HRR (High Range Resolution)	Generic	2	Available for Future Use	Reserved	56-60
UHRR (Ultra High Range Resolution)	Generic	3	GMTI PPI Mode	TUAV	61
HUR (High Update Rate)	Generic	4	GMTI Expanded Mode	TUAV	62
FTI	Generic	5	Narrow Sector Search (NSS)	ARL-M	63
Available for Future Use	Reserved	6-10	Single Beam Scan (SBS)	ARL-M	64
Attack Control – SATC	Joint STARS	11	Wide Area (WA)	ARL-M	65
Attack Control	Joint STARS	12	Available for Future Use	Reserved	66-80
SATC	Joint STARS	13	GRCA	Reserved	81
Attack Planning - SATC	Joint STARS	14	RRCA	Reserved	82
Attack Planning	Joint STARS	15	Sector Search	Reserved	83
Medium Resolution Sector Search	Joint STARS	16	HORIZON Basic	HORIZON	84
Low Resolution Sector Search	Joint STARS	17	HORIZON High Sensitivity	HORIZON	85
Wide Area Search - GRCA	Joint STARS	18	HORIZON Burn Through	HORIZON	86
Wide Area Search - RRCA	Joint STARS	19	CRESO Acquisition	CRESO	87
Attack Planning – With Tracking	Joint STARS	20	CRESO Count	CRESO	88
Attack Control – With Tracking	Joint STARS	21	Available for Future Use	Reserved	89-93
Available for Future Use	Reserved	22-30	MTI EXO	ASTOR	94
Wide Area MTI (WAMTI)	ASARS-AIP	31	MTI ENDO/EXO	ASTOR	95
Coarse Resolution Search	ASARS-AIP	32	Available for Future Use	Reserved	96-99
Medium Resolution Search	ASARS-AIP	33	Test/Status Mode	Reserved	100
High Resolution Search	ASARS-AIP	34	MTI Spot Scan	Lynx I/II	101
Point Imaging	ASARS-AIP	35	MTI Arc Scan	Lynx I/II	102
Swath MTI (SMTI)	ASARS-AIP	36	HRR/MTI Spot Scan	Lynx I/II	103
Repetitive Point Imaging	ASARS-AIP	37	HRR/MTI Arc Scan	Lynx I/II	104
Monopulse Calibration	ASARS-AIP	38	Available for Future Use	Reserved	105-110

Available for Future Use	Reserved	39-50	GRCA	Global Hawk	111
Search	ASARS-2	51	RRCA	Global Hawk	112
EMTI Wide Frame Search	ASARS-2	52	GMTI-HRR	Global Hawk	113
EMTI Narrow Frame Search	ASARS-2	53	Available for Future Use	Reserved	114-255

Table G-7.2. Allowed Terrain Elevation Models

VALUE	TERRAIN ELEVATION MODEL
0 (0x00)	None Specified
1 (0x01)	DTED0 (Digital Terrain Elevation Data, Level 0
2 (0x02)	DTED1 (Digital Terrain Elevation Data, Level 1
3 (0x03)	DTED2 (Digital Terrain Elevation Data, Level 2
4 (0x04)	DTED3 (Digital Terrain Elevation Data, Level 3
5 (0x05)	DTED4 (Digital Terrain Elevation Data, Level 4
6 (0x06)	DTED5 (Digital Terrain Elevation Data, Level 5
7 (0x07)	SRTM1 (Shuttle Radar Topography Mission, Level 1)
8 (0x08)	SRTM2 (Shuttle Radar Topography Mission, Level 2)
9 (0x09)	DGM50 M745 (Digitales Gelandemodell 1:50 000)
10 (0x0A)	DGM 250 (Digitales Gelandemodell 1:250 000)
11 (0x0B)	ITHD (Interferometric Terrain Data Height)
12 (0x0C)	STHD (Stereometric Terrain Data Height)
13 (0x0D)	SEDRIS (SEDRIS Reference Model, ISO/IEC 18026)

G.9.8 SUBTEST 08, FREE TEXT SEGMENT

1) Objective

- Determine to what extent the GMTIF application can interpret packets containing Free Text Segment(s).
- Determine to what extent the GMTIF application can properly create packets containing valid Free Text Segment(s).

2) Criteria

The Free Text Segment provides a means of sending alphanumeric text messages. Unless otherwise noted or clarified in the associated criteria listed below, the criteria are as specified in Table G-8. (Note that Table G-8 correlates to Table 3-19 in Chapter 3 of the standard.)

- All interpret capable applications may optionally support the unpacking, interpretation and proper presentation of the Free Text Segment data for use by the application.
- All generate capable applications may optionally support the production of Free Text Segments.

- Generate capable applications supporting the production of Free Text Segments must ensure all fields are filled with valid data. Fields with all spaces (0x20) are not allowed.

Table G-8. Free Text Segment

Field	Field Name	Bytes	Form	Comment and/or Value Range	Type
F1	Originator ID	10	A	Identifies the originator of the Free Text message.	M
F2	Recipient ID	10	A	Identifies the recipient for which the Free Text message is intended.	M
F3	Free Text	nn	A	The free text data. • nn = 1 to 65515 Bytes.	M

* Type: Mandatory (M) - must be present.

G.9.9 SUBTEST 09, LOW REFLECTIVITY INDEX (LRI) SEGMENT

The LRI Segment is reserved for future development and is precluded from production by generating applications.

G.9.10 SUBTEST 10, GROUP SEGMENT

The Group Segment is reserved for future development and is precluded from production by generating applications.

G.9.11 SUBTEST 11, ATTACHED TARGET SEGMENT

The Attached Target Segment is reserved for future development and is precluded from production by generating applications.

G.9.12 SUBTEST 12, TEST AND STATUS SEGMENT

1) Objective

- Determine to what extent the GMTIF application can interpret packets containing Test and Status Segment(s).
- Determine to what extent the GMTIF application can properly create packets containing valid Test and Status Segment(s).

2) Criteria

The Test and Status Segment provides a means to exchanging health and status information of the platform systems. Unless otherwise noted or clarified in the associated criteria listed below, the criteria are as specified in Table G-9. (Note that Table G-9 correlates to Table 3-20 in Chapter 3 of the standard.)

- The interpretation and generation of the Test and Status Segment is optional.
- The generating application supporting Test and Status Segments will assign a number to the Job ID identifying the specific request or task to which the dwell pertains.
- The generating application supporting Test and Status Segments will set the Revisit Index for the first visit to “0” and increment the Revisit Index by one for each subsequent visit of the same bounding area as given in the Job ID. The Revisit Index will wrap when the allowable range of the revisits is exceeded.
- The generating application supporting Test and Status Segments will set the Dwell Index to “0” for the first visit and increment each time the Revisit Index wraps.
- The generating application supporting Test and Status Segments will populate the Dwell Time with the elapsed time expressed in milliseconds from the midnight at the beginning of the day specified in the Reference Time fields of the Mission Segment to the temporal center of the dwell.

Table G-9. Test and Status Segment

Field	Field Name	Bytes	Form	Comment and/or Value Range	Type*
T1	Job ID	4	I32	• 0 to 4294967295 (0x00000000 to 0xFFFFFFFF)	M
T2	Revisit Index	2	I16	• 1 to 65535 (0x0000 to 0xFFFF)	M
T3	Dwell Index	2	I16	• 1 to 65535 (0x0000 to 0xFFFF)	M
T4	Dwell Time	4	I32	• 0 (0x00000000) to 4 x (10^9) (0xEE6B2800)	M
T5	Hardware Status	1	FL	Indicates the status of a particular Hardware parameter; binary 0 indicates pass status, binary 1 indicates fail status: • Bit 7, a=Antenna Status • Bit 6, b=RF Electronics Status • Bit 5, c=Processor Status • Bit 4, d=Datalink Status • Bit 3, e=Calibration Mode Status • Bits 2, 1 and 0 must be set to binary 0	M
T6	Mode Status	1	FL	Indicates the status of a particular sensor parameter; binary 0 indicates parameter is inside the operational limit tests, binary 1 indicates the parameter is outside the operational limit tests: • Bit 7, a=Range Limit Exceeded • Bit 6, b=Azimuth Limit Exceeded • Bit 5, c=Elevation Limit Exceeded • Bit 4, d=Temperature Limit Exceeded • Bits 3, 2, 1 and 0 must be set to a binary 0	M

G.9.13 SUBTEST 13, SYSTEM-SPECIFIC SEGMENT

The System-Specific Segment is reserved for future development and is precluded from production by generating applications.

G.9.14 SUBTEST 14, PROCESSING HISTORY SEGMENT

1) Objective

- Determine to what extent the GMTIF application can interpret packets containing Processing History Segment(s).
- Determine to what extent the GMTIF application can properly create packets containing valid Processing History Segment(s).

2) Criteria

The Processing History Segment provides a means of annotating the sensor data to show its history as it is processed through various systems during transmission. Unless otherwise noted or clarified in the associated criteria listed below, the criteria are as specified in Table G-10. (Note that Table G-10 correlates to Table 3-21 in Chapter 3 of the standard.)

- The interpretation and generation of the Processing History Segment is optional.

Table G-10. Processing History Segment

Field	Field Name	Bytes	Form	Comment and/or Value Range	Type*
C1	Processing History Count	1	I8	Count of the number of processing records included in this segment. • 1 to 255 (0x00 to 0xFF)	M
C2	Based on Nationality	2	A	A digraphwhich identifies the Nationality of the original radar job, or XN for a NATO platform.	M
C3	Based on Platform ID	10	A	The Platform ID of the original radar job: • For aircraft shall be tail number • For satellite shall be numerical designator • Note: All spaces are not allowed	M
C4	Based on Mission ID	4	I32	A numerical value assigned by the original radar job that uniquely identifies the mission.	M
C5	Based on Job ID	4	I32	• 0x00000001 to 0xFFFFFFFF A platform-assigned number identifying the specific request or task to which the packet pertains. The Job ID shall be unique within a mission.	M
C6	<Processing Records>			Note: The following will be repeated for each processing report.	
C6.1	Processing History Sequence Number	1	I8	The sequential count of this Processing Record with the Processing Segment. • 1 to 255 (0x00 to 0xFF)	M
C6.2	Nationality of Modifying System	2	A	A digraph which identifies the Nationality or XN for a NATO platform of modifying system job.	M
C6.3	Platform ID of Modifying System	10	A	The Platform ID of the modifying system job.	M
C6.4	Mission ID of Modifying	4	I32	The Mission ID for the modifying system job.	M
C6.5	Job ID of Modifying System	4	I32	The Job ID for the modifying system job.	M
C6.6	Processing Performed	2	FL	Indication of additional processing performed on the radar data. • 0x0000 No Processing or Filtering • 0x0001 Area Filtering • 0x0002 Target Classification Filtering • 0x0004 LOS Velocity Filtering • 0x0008 SNR Filtering • 0x0010 De-clutter Filtering • 0x0020 Bandwidth Filtering • 0x0040 Revisit Filtering • 0x0080 Location Filtering • 0x0100 Geoid Adjustment • 0x0200 Location Registration • 0x0400 Time Filtering • 0x0800 Security Filtering • 0x1000 Data Augmentation • 0x2000 Target Coordinate Conversion	M

* Type: Mandatory (M) - must be present.

G.9.15 SUBTEST 15, PLATFORM LOCATION SEGMENT

1) Objective

- Determine to what extent the GMTIF application can interpret packets containing Platform Location Segment(s).
- Determine to what extent the GMTIF application can properly create packets containing valid Platform Location Segment(s).

2) Criteria

The Platform Location Segment provides the means for the platform to transmit its location during periods when it is not collecting data. Unless otherwise noted or clarified in the associated criteria listed below, the criteria are as specified in Table G-11. (Note that Table G-11 correlates to Table 3-24 in Chapter 3 of the standard.)

- The interpretation and generation of the Platform Location Segment is optional.

Table G-11. Platform Location Segment

Field	Field Name		Bytes	Form	Comment and/or Value Range	Type*
L1	Location Time		4	I32	The elapsed time, expressed in milliseconds, from midnight at the beginning of the day specified in the Reference Time fields of the Mission Segment to the time the report is prepared. • 0 (0x00000000) to 4 x (10^9) (0xEE6B2800)	M
L2	Platform Position	Latitude	4	SA32	The North-South center of the platform at the time the report is prepared, expressed as degrees North (positive) or South (negative) of the Equator. • - 90 to + 89.999989 • See subsection 3.15.2 of the standard	M
L3		Longitude	4	BA32	The East-West center of the platform at the time the report is prepared, expressed as degrees East (positive) of the Prime Meridian. • 0 to +359.999979 • See subsection 3.15.3 of the standard	M
L4		Altitude	4	S32	Altitude of the sensor at the platform at the time the report is prepared, referenced to its position above the WGS 84 ellipsoid, expressed in centimeters. • -50000 to +2 billion • See subsection 3.15.4 of the standard	M
L5	Platform Track		2	BA16	The ground track of the platform at the time the report is prepared, expressed as the angle in degrees (clockwise) form True North. • 0 to 359.9945	M

Field	Field Name	Bytes	Form	Comment and/or Value Range	Type*
				• See subsection 3.15.5 of the standard	
L6	Platform Speed	4	I32	The ground speed of the platform at the time the report is prepared, expressed as millimeters per second. • 0 (0x00000000) to 8000000 (0x007A1200)	M
L7	Platform Vertical Velocity	1	S8	The velocity of the platform in the vertical direction, expressed as decimeters per second. • -128 to +127	M

* Type: Mandatory (M) - must be present.

G.9.16 SUBTEST 16, JOB REQUEST SEGMENT

1) Objective

- Determine to what extent the GMTIF application can interpret packets containing Job Request Segment(s).
- Determine to what extent the GMTIF application can properly create packets containing valid Job Request Segment(s).

2) Criteria

The Job Request Segment provides a recommended format for requesting service from the sensor platform. Unless otherwise noted or clarified in the associated criteria listed below, the criteria are as specified in Table G-12. (Note that Table G-12 correlates to Table 4-1 in Chapter 4 of the standard.)

- The interpretation and generation of the Job Request Segment is optional.
- The generating application supporting the Job Request Segment must ensure that the Requestor ID and Requestor Task ID are populated; fields with all spaces (0x20) are not allowed.

Table G-12. Job Request Segment

Field	Field Name		Bytes	Form	Comment and/or Value Range	Type*
R1	Requestor ID		10	A	Identifies the requestor of the sensor service.	M
R2	Requestor Task ID		10	A	Identifies the sender of the tasking message by the requesting station.	M
R3	Priority (Requestor Priority)		1	I8	Specifies the priority of this tasking request relative to other requests originated by the requesting station. • 1 (0x00) to 99 (0x63) Note: 1 is highest and 99 is lowest priority.	M
R4	Bounding Area	Pt A Latitude	4	SA32	The North-South position of the first corner (Point A) defining the requested area for service, expressed as degrees North (positive) or South (negative) of the Equator. • - 90 to + 89.999989 • See subsection 4.1.4 of the standard	M
R5		Pt A Longitude	4	BA32	The East-West position of the first corner (Point A) defining the requested area for service, expressed as degrees East (positive) of the Prime Meridian. • 0 to +359.999979 • See subsection 4.1.5 of the standard	M
R6		Pt B Latitude	4	SA32	The North-South position of the second corner (Point B) defining the requested area for service, expressed as degrees North (positive) or South (negative) of the Equator. • - 90 to + 89.999989 • See subsection 4.1.6 of the standard	M

Table G-12. Job Request Segment (cont.)

Field	Field Name		Bytes	Form	Comment and/or Value Range	Type*
R7		Pt B Longitude	4	BA32	The East-West position of the second corner (Point B) defining the requested area for service, expressed as degrees East (positive) of the Prime Meridian. • 0 to +359.999979 • See subsection 4.1.7 of the standard	M
R8		Pt C Latitude	4	SA32	The North-South position of the third corner (Point C) defining the requested area for service, expressed as degrees North (positive) or South (negative) of the Equator. • - 90 to + 89.999989 • See subsection 4.1.8 of the standard	M
R9		Pt C Longitude	4	BA32	The East-West position of the third corner (Point C) defining the requested area for service, expressed as degrees East (positive) of the Prime Meridian. • 0 to +359.999979 • See subsection 4.1.9 of the standard	M
R10		Pt D Latitude	4	SA32	The North-South position of the fourth corner (Point D) defining the requested area for service, expressed as degrees North (positive) or South (negative) of the Equator. • - 90 to + 89.999989 • See subsection 4.1.10 of the standard	M
R11		Pt D Longitude	4	BA32	The East-West position of the fourth corner (Point D) defining the requested area for service, expressed as degrees East (positive) of the Prime Meridian. • 0 to +359.999979 • See subsection 4.1.11 of the standard	M
R12	Radar Mode		1	E8	See Table G-7.1 for allowed Modes. Note that radar modes 0-5 are generic modes that will be used in non-platform-specific job requests.	M
R13	Radar Resolution	Range	2	I16	Specifies the radar range resolution requested by the requestor, expressed in centimeters. • 1 (0x0001) to 65535 (0xFFFF) • 0 (0x00) = Don't Care	M
R14		Cross-Range	2	I16	Specifies the radar cross-range resolution requested by the requestor, expressed in decimeters. • 1 (0x0001) to 65535 (0xFFFF) • 0 (0x00) = Don't Care	M
R15	Earliest Start Time	Year	2	I16	Year of Service requested. • 2000 (0x07D0) to 2099 (0x0833)	M
R16		Month	1	I8	Month of Service requested. • 1 (0x00) to 12 (0x0C)	M
R17		Day	1	I8	Day of Service requested. • 1 (0x00) to 31 (0x1F)	M
R18		Hour	1	I8	Hour of Service requested. • 0 (0x00) to 23 (0x17)	M

Table G-12. Job Request Segment (cont.)

Field	Field Name		Bytes	Form	Comment and/or Value Range	Type*
R19		Minutes	1	I8	Minutes of Service requested. • 0 (0x00) to 59 (0x3B)	M
R20		Seconds	1	I8	Seconds of Service requested. • 0 (0x00) to 59 (0x3B)	M
R21		Allowed Delay	2	I16	Specifies the maximum time from the requested start time after which the request it to be abandoned, expressed in seconds. • 0 (0x0000) to 65535 (0xFFFF)	M
R22	Duration		2	I16	Specifies the time duration for the radar job, measured from the actual start of the job, expressed in seconds. • 1 (0x0001) to 65535 (0xFFFF) • 0 (0x0000) = Continuous	M
R23	Revisit Interval		2	I16	Specifies the revisit interval for the radar job, expressed in deciseconds. • 1 (0x0001) to 65535 (0xFFFF) • 0 (0x0000) = Default interval	M
R24	Sensor ID	Type	1	E8	Allowed Sensor Types: • 0, (0x00) = Unidentified • 1, (0x01) = Other • 2, (0x02) = HiSAR (ARL-M) • 3, (0x03) = ASTOR • 4, (0x04) = Rotary Wing Radar *(was CRESO)* • 5, (0x05) = Global Hawk Sensor • 6, (0x06) = HORIZON • 7, (0x07) = APY-3 • 8, (0x08) = APY-6 • 9, (0x09) = APY-8 (Lynx I) • 10, (0x0A) = RADARSAT2 • 11, (0x0B) = ASARS-2A • 12, (0x0C) = TESAR • 13, (0x0D) = MP-RTIP • 14, (0x0E) = APG-77 • 15, (0x0F) = APG-79 • 16, (0x10) = APG-81 • 17, (0x11) = APY-6v1 • 18, (0x12) = DPY-1 (Lynx II) • 19, (0x13) = SIDM • 20, (0x14) = LIMIT • 21, (0x15) = TCAR (AGS A321) • 22, (0x16) = LSRS Sensor • 23, (0x17) = UGS Single Sensor • 24, (0x18) = UGS Cluster Sensor • 255, (0xFF) = No Statement	M
R25		Model	6	A	An alphanumeric field identifying the particular variant of the sensor type.	M
R26	Cancel Job Request		1	FL	Indicates type of request. • 0 (0x00) = initial request • 1 (0x01) = cancel the requested job	M

* Type: Mandatory (M) - must be present.

G.9.17 SUBTEST 17, JOB ACKNOWLEDGE SEGMENT

1) Objective

- Determine to what extent the GMTIF application can interpret packets containing Job Acknowledge Segment(s).
- Determine to what extent the GMTIF application can properly create packets containing valid Job Acknowledge Segment(s).

2) Criteria

The Job Acknowledge Segment provides a recommended format for acknowledging a sensor service request by a sensor platform, defining the job to be performed by the sensor, and notifying the requesting operator whether the task can be accomplished or not during the mission. Unless otherwise noted or clarified in the associated criteria listed below, the criteria are as specified in Table G-13. (Note that Table G-13 correlates to Table 4-2 in Chapter 4 of the standard.)

- The interpretation and generation of the Job Acknowledge Request Segment is optional.
- The generating application supporting the Job Acknowledge Segment must ensure that the Requestor ID and Requestor Task ID are populated; fields with all spaces (0x20) are not allowed.

Table G-13. Job Acknowledge Segment

Field	Field Name	Bytes	Form	Comment and/or Value Range	Type*
A1	Job ID	4	I32	A platform assigned number identifying the specific request or task to which the dwell pertains. • 0 (0x00000001) to 4294967295 (0xFFFFFFFF)	M
A2	Requestor ID	10	A	Identifies the requestor of the radar service.	M
A3	Requestor Task ID	10	A	Identifies the sender of the tasking message by the requesting station.	M

Table G-13. Job Acknowledge Segment (cont.)

Field	Field Name		Bytes	Form	Comment and/or Value Range	Type*
A4	Sensor ID	Type	1	E8	Allowed Sensor Types: • 0, (0x00) = Unidentified • 1, (0x01) = Other • 2, (0x02) = HiSAR (ARL-M) • 3, (0x03) = ASTOR • 4, (0x04) = Rotary Wing Radar *(was CRESO)* • 5, (0x05) = Global Hawk Sensor • 6, (0x06) = HORIZON • 7, (0x07) = APY-3 • 8, (0x08) = APY-6 • 9, (0x09) = APY-8 (Lynx I) • 10, (0x0A) = RADARSAT2 • 11, (0x0B) = ASARS-2A • 12, (0x0C) = TESAR • 13, (0x0D) = MP-RTIP • 14, (0x0E) = APG-77 • 15, (0x0F) = APG-79 • 16, (0x10) = APG-81 • 17, (0x11) = APY-6v1 • 18, (0x12) = DPY-1 (Lynx II) • 19, (0x13) = SIDM • 20, (0x14) = LIMIT • 21, (0x15) = TCAR (AGS A321) • 22, (0x16) = LSRS Sensor • 23, (0x17) = UGS Single Sensor • 24, (0x18) = UGS Cluster Sensor • 255, (0xFF) = No Statement	M
A5		Model	6	A	An alphanumeric field identifying the particular variant of the sensor type providing the service.	M
A6	Priority (Radar Priority)		1	I8	Specifies the priority of this tasking request relative to all other active tasking requests scheduled for execution on the specified platform. • 1 (0x00) to 99 (0xFF) Note: 1 is highest and 99 is lowest priority.	M
A7	Bounding Area	Pt A Latitude	4	SA32	The North-South position of the first corner (Point A) defining the area for sensor service, expressed as degrees North (positive) or South (negative) of the Equator. • - 90 to + 89.999989 • See subsection 4.2.7 of the standard	M
A8		Pt A Longitude	4	BA32	The East-West position of the first corner (Point A) defining the area for sensor service, expressed as degrees East (positive) of the Prime Meridian. • 0 to +359.999979 • See subsection 4.2.8 of the standard	M
A9		Pt B Latitude	4	SA32	The North-South position of the second corner (Point B) defining the area for sensor service, expressed as degrees North (positive) or South (negative) of the Equator. • - 90 to + 89.999989 • See subsection 4.2.9 of the standard	M

Table G-13. Job Acknowledge Segment (cont.)

Field	Field Name		Bytes	Form	Comment and/or Value Range	Type*
A10		Pt B Longitude	4	BA32	The East-West position of the second corner (Point B) defining the area for sensor service, expressed as degrees East (positive) of the Prime Meridian. • 0 to +359.999979See subsection 4.2.10 of the standard	M
A11		Pt C Latitude	4	SA32	The North-South position of the third corner (Point C) defining the area for sensor service, expressed as degrees North (positive) or South (negative) of the Equator. • - 90 to + 89.999989See subsection 4.2.11 of the standard	M
A12		Pt C Longitude	4	BA32	The East-West position of the third corner (Point C) defining the area for sensor service, expressed as degrees East (positive) of the Prime Meridian. • 0 to +359.999979 • See subsection 4.2.12 of the standard	M
A13		Pt D Latitude	4	SA32	The North-South position of the fourth corner (Point D) defining the area for sensor service, expressed as degrees North (positive) or South (negative) of the Equator. • - 90 to + 89.999989 • See subsection 4.2.13 of the standard	M
A14		Pt D Longitude	4	BA32	The East-West position of the fourth corner (Point D) defining the area for sensor service, expressed as degrees East (positive) of the Prime Meridian. • 0 to +359.999979 • See subsection 4.2.14 of the standard	M
A15	Radar Mode		1	E8	See Table G-7.1 for allowed Modes. Note that radar modes 0-5 are generic modes that will be used in non-platform-specific job requests.	M
A16	Duration		2	I16	Specifies the time duration for the radar job, measured from the actual start of the job, expressed in seconds. • 1 (0x0001) to 65535 (0xFFFF) • 0 (0x0000) = Continuous	M
A17	Revisit Interval		2	I16	Specifies the revisit interval for the radar job, expressed in deciseconds. • 1 (0x0001) to 65535 (0xFFFF) • 0 (0x0000) = Default interval	M
A18	Request Status		1	E8	Status of request: • 0 (0x00) = Request • 1 (0x01) = Approved • 2 (0x02) = Approved, with Modification • 3 (0x03) = Denied: Line of Sight • 4 (0x04) = Denied: Timeline • 5 (0x05) = Denied: Orbit • 6 (0x06) = Denied: Priority • 7 (0x07) = Denied: Area of Interest • 8 (0x08) = Denied: Illegal Request • 9 (0x09) = Denied: Function Inoperative • 10 (0x0A) = Denied: Other	M

Table G-13. Job Acknowledge Segment (cont.)

Field	Field Name		Bytes	Form	Comment and/or Value Range	Type*
A19	Radar Job Start Time	Year	2	I16	Year of Radar Job Start Time. • 2000 (0x07D0) to 2099 (0x0833)	M
A20		Month	1	I8	Month of Radar Job Start Time. • 1 (0x00) to 12 (0x0C)	M
A21		Day	1	I8	Day of Radar Job Start Time. • 1 (0x00) to 31 (0x1F)	M
A22		Hour	1	I8	Hour of Radar Job Start Time. • 0 (0x00) to 23 (0x17)	M
A23		Minutes	1	I8	Minutes of Radar Job Start Time. • 0 (0x00) to 59 (0x3B)	M
A24		Seconds	1	I8	Seconds of Radar Job Start Time. • 0 (0x00) to 59 (0x3B)	M
A25	Requestor Nationality ID		2	A	A digraph which identifies the nationality of the requestor of the radar job. NATO requestors shall use the digraph XN.	M

* Type: Mandatory (M) - must be present.

G.9.18 SUBTEST 18, FILE ERROR HANDLING/PREVENTION

1) Objective

Determine to what extent a GMTIF interpreting application can handle GMTIF Packets containing errors as well as GMTIF Packets with unsupported segments. (NOTE: This subtest only applies to interpret capable applications, since generating systems that are compliant to STANAG 4607 should not be creating data packets with errors.)

2) Criteria

This subtest is simply a means to evaluate an interpret capable application and it's ability to handle both GMTIF Packets containing errors as well as GMTIF Packets with unsupported segments. As some generate capable systems may be more robust than interpreters, and capable of supporting GMTIF Segments beyond those supported by other interpreters, these unsupported GMTIF Segments must be handled without adversely disrupting the interpret application. Additionally, interpreters must be able to handle segments without adversely disrupting the application when attempting to interpret GMTIF Packets that contain errors because of production of non-compliant processes or dropped Bytes in the transmission of the Packets.

- The interpret application must successfully handle any optional GMTIF features outside the established MIC core required for support as designated by the sponsoring agency.

- Upon detecting an unsupported feature of a GMTIF packet, the interpret application must at least alert the user of the event and provide an option to either abort the process or continue the unpack process. If the process is continued the interpret application must unpack, interpret, and present the information of supported features as outlined in Subtests 01 to 17.
- Upon detecting a GMTIF Packet with an error, the interpret application must alert the user and abort the process without adversely disrupting the operation of the application (such as requiring a re-boot or re-initialization of the system).

G.9.19 SUBTEST 19, EMBEDDING GMTIF IN NATO SECONDARY IMAGERY FORMAT (NSIF, STANAG 4545) OR NATIONAL IMAGERY TRANSMISSION FORMAT (NITF)

1) Objective

- Determine to what extent the application can interpret GMTIF packets embedded in an NSIF or NITF file.
- Determine to what extent the application can properly create packets and embed the GMTIF packets in an NSIF or NITF file.

2) Criteria

The GMTIF is a binary, message-oriented format for the prompt dissemination of MTI data and may be embedded in a frame-oriented format, such as the NATO Secondary Imagery Format (NSIF, STANAG 4545) or the National Imagery Transmission Format (NITF, MIL-STD-2500C) for the dissemination of data using existing distribution sources and applications. Unless otherwise noted or clarified in the associated criteria listed below, the criteria are as specified in Table G-14. (Note that Table G-14 correlates to Table B-1 in Annex B of this document.)

- The interpretation and generation of the embedded GMTIF data packets in NSIF or NITF files is optional.
- The generating application supporting the embedding of GMTIF data packets in NSIF or NITF files must ensure that GMTIF packets are embedded in a Data Extension Segment (DES).
- The generating application supporting the embedding of GMTIF data packets in NSIF or NITF files must ensure that the embedded GMTIF packets are compliant with STANAG 4607 as identified in Subtests 1 to 18.
- The generating application supporting the embedding of GMTIF data packets in NSIF or NITF files must ensure that the NSIF or NITF files are in compliance with the associated NSIF and NITF specifications.

- The generating application supporting the embedding of GMTIF data packets in NSIF or NITF files must ensure that all required DES Sub-header fields are populated based on Table G-14.
- The generating application supporting the embedding of GMTIF data packets in NSIF or NITF files must ensure that the security fields within the DES Sub-header are equal to or greater than the security classification information found in the GMTIF packet header.
- The generating application supporting the embedding of GMTIF data packets in the NSIF or NITF files must ensure that if fields 025 to 042 in Table G-14 are populated that they match the associated data fields from the appropriate GMTIF Segment or Packet Header fields. Note: fields with all Spaces (0x20) are allowed if the generating application chooses not to populate the appropriate fields.
- The interpreting application supporting embedded GMTIF data packets within NSIF or NITF files must successfully unpack, read and properly interpret the NSIF/NITF files based on the associated NSIF and NITF specifications as well as the embedded GMTIF packets as identified in Subtests 1 to 18.

NOTE: The terms “Extension” and “Segment” in this section are those used in STANAG 4545 and are not to be confused with similar terms for providing new capabilities for STANAG 4607, as described in Annex J of this document.

Table G-14. Data Extension Segment

(TYPE “R” = Required, “C” = Conditional, “< >“ = BCS Spaces allowed or other default for entire field)					
Field	**Field Name**	**Bytes**	**Form**	**Comment and/or Value Range**	**Type**
001	DE	2	A	DE	R
002	DESID	25	A	MOVING TARGET REPORT (20 characters followed by 5 spaces)	R
003	DESVER	2	A	01	R
004	DECLAS	1	A	ECS-A T, S, C, R, or U	R
005	NOTE: If the value of the DESCLAS field is T, S, C, or R, then the DESCLSY field must be populated with a valid code for the security classification system used.				
006	DESCLSY	2	A	See para 3.1.5, Table 3-3 of AEDP 4607	<R>
007	NOTE: If any of the following fields are populated with anything other than spaces, then the DESCLSY field must be populated with a valid code for the security classification system used: DESCODE, DESREL, DESDCTP, DESDCDT, DESDCXM, DESDG, DESDGDT, DESCLDES, DESCATP, DESCAUT, DESCRSN, DESSRDT, and DESCTLN.				
008	DESCODE	11		ECS-A (Default is ECS Spaces (0x20))	<R>
009	DESCTLH	2		ECS-A (Default is ECS Spaces (0x20))	<R>

Table G-14. Data Extension Segment (cont.)

Field	Field Name	Bytes	Form	Comment and/or Value Range	Type
010	DESREL	20		ECS-A (Default is ECS Spaces (0x20))	<R>
011	DESDCTP	2		ECS-A DD, DE, GD, GE, O, X (Default is ECS Spaces (0x20))	<R>
012	DESDCDT	8	A	ECS-A CCYYMMDD (Default is ECS Spaces (0x20))	<R>
013	DESDCXM	4	A	ECS-A X1 to X8 X251 to X259 (Default is ECS Spaces (0x20))	<R>
014	DESDG	1	A	ECS-A S, C, R (Default is ECS Spaces (0x20))	<R>
015	DESDGDT	8	A	ECS-A CCYYMMDD (Default is ECS Spaces (0x20))	<R>
016	DESCLTX	43	A	ECS-A User-defined free text (Default is ECS Spaces (0x20))	<R>
017	DESCATP	1	A	ECS-A O, D, M (Default is ECS Space (0x20))	<R>
018	DESCAUT	40	A	ECS-A User-defined free text (Default is ECS Spaces (0x20))	<R>
019	DESCRSN	1	A	ECS-A A to G (Default is ECS Space (0x20))	<R>
020	DESSRDT	8	A	ECS-A CCYYMMDD (Default is ECS Spaces (0x20))	<R>
021	DESCTLN	15	A	ECS-A (Default is ECS Spaces (0x20))	<R>
022	DESSHL	4	N	200	R
023	MTI-DLVL	3	N	001-999	R
024	MTI-ALVL	3	N	000-998 (Default is 000)	<R>
025	MTI_COUNTRY	2	A	From GMTIF Packet Header, field P3.	C
026	MTI_PLATFORM	10	A	From GMTIF Packet Header, field P8.	C
027	MTI_SENSOR	3	N	From GMTIF Job Definition Segment, field J2.	C
028	MTI_MISSION	16	A	From GMTIF Packet Header, field P9.	C
029	MTI_MISSION_PLAN	12	A	From GMTIF Mission Segment, field M1.	C
030	MTI_FLIGHT_PLAN	12	A	From GMTIF Mission Segment, field M2.	C
031	MTI_PLATFORM_TYPE	3	N	From GMTIF Mission Segment, field M3.	C
032	MTI_CONFIG	10	A	From GMTIF Mission Segment, field M4.	C
033	MTI_START_DAY_TIME	14	N	The earliest dwell day and time in all of the GMTIF segments in this DES segment, truncated to one second of resolution. (Computed from GMTIF Mission Segment,	C

Table G-14. Data Extension Segment (cont.)

Field	Field Name	Bytes	Form	Comment and/or Value Range	Type
				fields M5, M6, and M7, and GMTIF Dwell Segment, field D6)	
034	MTI_END_DAY_TIME	14	N	The latest dwell day and time in all of the GMTIF segments in this DES segment, truncated to one second of resolution. (Computed from GMTIF Mission Segment, fields M5, M6, and M7, and GMTIF Dwell Segment, field D6)	C
035	MTI_START_MSEC	3	N	The difference between the earliest dwell time in all of the GMTIF segments in this DES segment and the Start Day and Time. (Computed from GMTIF Mission Segment, fields M5, M6, and M7, and GMTIF Dwell Segment, field D6)	C
036	MTI_END_MSEC	3	N	The difference between the latest dwell time in all of the GMTIF segments in this DES segment and the End Day and Time. (Computed from GMTIF Mission Segment, fields M5, M6, and M7, and GMTIF Dwell Segment, field D6)	C
037	MTI_RADAR_MODE	3	N	From GMTIF Job Definition, field J14.	C
038	MTI_REVISIT_ INTERVAL	5	N	From GMTIF Job Definition, field J15.	<C>
039	PT_A_LOC	21	N	From GMTIF Job Definition J6 and J7.	C
040	PT_B_LOC	21	N	From GMTIF Job Definition J8 and J9.	C
041	PT_C_LOC	21	N	From GMTIF Job Definition J10 and J11.	C
042	PT_D_LOC	21	N	From GMTIF Job Definition J12 and J13.	C

G.9.20 SUBTEST 20, EMBEDDING GMTIF IN NATO PRIMARY IMAGERY FORMAT (NPIF, STANAG 7023)

NATO STANAG 4607 GMTI can be embedded in STANAG 7023, refer to that standard for more details.

G.10 Test Scenarios

This section provides the scenarios used by testing organizations and facilities to test STANAG 4607.

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ANNEX H GMTIF Configuration Management Plan

H.1 Purpose

The purpose of this document is to provide the framework for the management of STANAG 4607 and all associated documents.

H.1.1 Related documents:

H.1.1.1 Documents included in this Configuration Management Plan:

AEDP-4607	NATO Ground Moving Target Indicator Format (GMTIF)
AEDP-2	NATO Intelligence, Surveillance, and Reconnaissance (ISR) Interoperability Architecture (NIIA)
AEDP-4607.1	NATO Ground Moving Target Indicator (GMTI) Format Implementation Guide
Other	As designated by the STANAG 4607 Custodian

H.1.1.2 Other referenced documents:

AAP-3 (J)	Directive for the Development and Production of NATO Standardization Agreements (STANAGs) and Allied Publications (APs)

H.2 Scope

This document provides the framework for configuration management of STANAG 4607 and all associated documents. The participating NATO member nations define their respective levels of participation and all NATO member nations have equal opportunity to have their respective positions voiced in the STANAG 4607 community. Decisions made within this framework are subject to final approval of the parent organization, in order to ensure the proper placement of STANAG 4607 within the overall NATO Imagery Interoperability Architecture (NIIA). Overall, the configuration management structure is consistent with the NATO guidelines defined in AAP-3(I), *Directive for the Development and Production of NATO Standardization Agreements (STANAGs) and Allied Publications (APs)*.

The key element of the configuration management process is the management of requests for change by individual nations.

H.3 STANAG Management Organization

H.3.1 General

H.3.1.1 Each NATO member nation is responsible for funding its own participation. Although each NATO member nation can assign representatives to the STANAG activities defined herein, any assigned representatives are expected to be active participants.

H.3.1.2 Should the STANAG 4607 Custodian be unable to properly execute business due to repeated lack of participation at the meetings, the Custodian shall report the lack of participation to the parent organization, who shall request that the representative of the respective nation(s) either withdraw from STANAG 4607 participation or appoint a new STANAG 4607 representative who will be able to fully participate.

H.3.2 Custodian/Chairman; The STANAG 4607 Custodian also serves as the chairman of all meetings of the configuration management functions. The Custodian is responsible for all STANAG 4607 activity. Specific duties include, but are not limited to the following tasks.

- Tracks changes and provides "official" copy for promulgation
- Reports to the parent organization on status
- Chairs STANAG 4607 Custodial Support Team (CST) meetings
- Directs activity of STANAG 4607 Administrative Support Team (AST)

H.3.2.1 The Custodian is the only individual to receive tasking from and report to the parent organization on STANAG 4607. This authority can be delegated to other members of the STANAG 4607 community, but responsibility for the tasking and reporting resides with the Custodian.

H.3.3 STANAG 4607 Custodial Support Team (4607 CST); The Custodial Support Team decides on the changes to be made to STANAG 4607.

H.3.3.1 STANAG 4607 Representatives; Representatives to the 4607 CST are appointed by the respective national representative to the parent organization. Each NATO member nation can appoint a representative to the 4607 CST by providing the name, organization, address, telephone and facsimile numbers, and electronic mail address of their 4607 CST member to the STANAG 4607 Custodian. (The STANAG 4607 Custodian will document the members of the 4607 CST and provide the information to the NATO Secretary for recording in the parent organization decision sheet.) The national representative to the 4607 CST can be from government or industry as chosen by the national representative to the parent organization. The national representative to the 4607 CST is the official spokesman for all participants from that nation.

H.3.3.2 Each national representative shall define procedures for establishing the respective national position on proposed changes. These procedures can use whatever process is appropriate to that nation, but ultimately the national representative will voice the official national position to the 4607 CST.

H.3.3.3 The authority of the national representative can be delegated to another individual from that nation in absence of the national representative. The delegation shall be in writing to the Custodian/chairman prior to the start of the meeting at which the delegation of authority is effective. The substitute representative shall have all authority and responsibility of the regular representative.

H.3.3.4 Other individuals from nations with representatives may participate at the discretion of national representatives or the Custodian/chairman. The participants can be additional government personnel or contractor personnel. The intent of having additional personnel participate is to provide technical, operational, or procedural expertise that may not be resident with the representatives and to allow participation by those who are developing systems using STANAG 4607.

H.3.3.5 Individuals from non-NATO nations may participate in 4607 CST meetings only at the request of the Custodian, and only to explain/defend changes proposed by the individual or from a non-NATO nation.

H.3.4 STANAG 4607 Administrative Support Team (4607 AST); The STANAG 4607 Administrative Support Team provides the necessary planning and maintenance activities to manage STANAG 4607 and related documents.

H.3.4.1 The members of the 4607 AST are selected by Custodian. Members are selected based on tasking and resources, and remain members of the 4607 AST at the discretion of the Custodian.

H.3.4.2 The members of the 4607 AST will perform the following functions.

- Prepare for meetings by identifying locations and dates for the meetings, preparing announcements, coordinating security clearances, providing guidance to meeting hosts, and preparing presentation materials and handouts.
- Presentation of recommended changes during the meetings.
- Track recommended changes submitted through 4607 CST channels.
- Prepare minutes of all meetings.
- Prepare revisions for distribution to NATO Secretary and members.
- Perform the configuration management for STANAG 4607, including maintaining the current version of the document.
- Disseminate all proposed changes to the 4607 CST as they are received and logged.

H.3.5 NATO Secretary; The NATO Secretary is responsible for maintaining the configuration management of the GMTIF web page on which registry information is posted.

H.3.5.1 The Secretary will update the postings for past and upcoming meetings based on information provided by the Custodian.

H.3.5.2 Once changes to STANAG 4607 are approved, the Secretary will post the revision to the GMTIF web page within 45 days of the meeting, unless other arrangements are agreed during the 4607 CST meeting.

H.3.5.3 Special Teams; The Custodian shall have the authority to convene special teams to examine major technical issues that are beyond the scope of routine change proposal activity. Technical issues of this type can include major changes to the format or development of future strategies for image interoperability. The Custodian can chair the special team or select another member of the GMTIF community to chair the special team and report on its progress. The members of the team will be appointed by the Custodian based on recommendations from the national representatives. The Custodian will identify any special teams, including the members, tasking, planned schedule, and expected products, to the parent organization.

H.4 Change Identification

H.4.1 All representatives can submit change requests that change the content or structure of STANAG 4607. Other personnel requesting changes shall submit their requests through the respective national representatives. For persons from NATO nations without formal representatives on the 4607 CST, the change requests shall be submitted through their respective parent organization representative.

H.4.1.1 Individuals from non-NATO nations may submit change proposals directly to the Custodian. In addition to the information contained in the standard change request form (Appendix 1 to this Annex), the submission shall include a cover letter which clearly identifies the name, title, organization, and contact information of the submitter, as well as a statement as to whether the submission is in response to a national government requirement. If the change supports a national government requirement, the requirement should be identified, and an endorsement included which is signed by an appropriate government representative. In all cases, the submitter should be prepared to attend the 4607 CST meeting to explain and/or defend the proposed change.

H.4.2 All change requests shall use a standard format, either by completing the form in Appendix 1 or electronic mail containing the same information and order as the form. The paper form can be submitted either through the mail or by telefax. The change request is submitted to the appropriate national representative, who then endorses the change and forwards it to the Custodian. The Custodian provides the change request to the 4607 AST for logging and dissemination for discussion and review.

H.4.3 All change requests shall identify the proposed change as either amendments of substance (formerly identified as Class I changes) or editorial amendments (formerly identified as Class II changes). Amendments of substance modify the functionality of the standard and will require software changes to comply. This includes changes to the order of fields, changes to the allowed or required values for a field, or additions/deletions of fields or approved values. Changes of substance are those identified as ratifiable changes in paragraph 211.2. of AAP-3(I) and require a new edition of the STANAG. Editorial amendments are for administrative or editorial revisions or to clarify the usage of the STANAG. These changes are those identified as non-ratifiable changes in paragraph 211.1 of AAP-3(I) and are made by issuing sequential amendments to the current edition of the STANAG as replacement pages. Editorial amendments also include those values shown in the STANAG as examples.

H.4.4 Extensions to the standard will also be managed by the 4607 CST. Change proposals will be submitted through the same channels as changes to the basic text. The change proposal for a new extension will identify the extension title in block 4 of the change request form (see Appendix 1), and enter “N/A” or “Not Applicable” in blocks 1, 2, 3, 5, and 7. Block 8 will contain the phrase “Proposed New Extension, see attached” and the proposed extension will be attached. Proposed extensions will be forwarded to all national POCs for review and discussed during the next 4607 CST meeting. A list of approved extensions will be posted to the parent organization web page.

H.4.5 Additional values for fields can also be submitted for consideration by the 4607 CST. Additional field values should be submitted using the form in Appendix 1, identifying the field affected in Block 4, and describing the reasons for the additional value in the justification block.

H.5 Configuration Management

H.5.1 Configuration Management, as defined in AEDP-2, defines the top level process. It specifies that once changes are produced, they should be forwarded to the NATO Standardization Agency (NSA). AEDP-2 does not specify the process within the sponsoring agency or for the Custodian to use in recording proposed changes and managing the change approval process. The primary purpose of this plan is to specify the process to be used by the STANAG 4607 Custodian.

H.5.2 The STANAG 4607 Configuration Management will be conducted on a cyclic basis. The process is shown in Figure H-1. Changes can be submitted at any time, but will be reviewed by the 4607 CST on a regular basis as required. Presentations to the parent organization will be performed on a semiannual basis to coincide with the regular meetings. Submissions to ISO for the profile to BIIF will be performed as required.

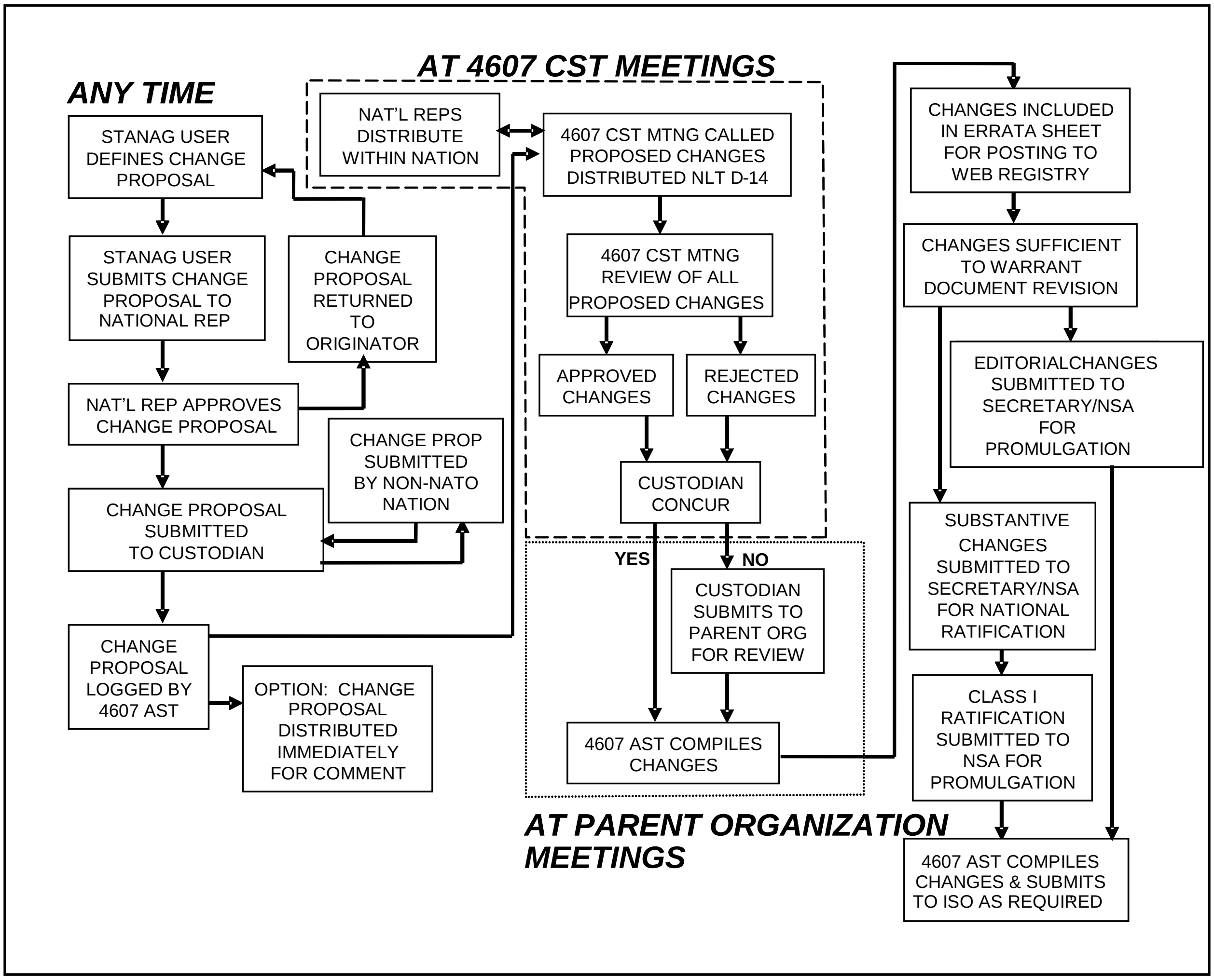

Figure H-1. CM Process Flow

H.5.3 Routine Business Activities; These activities can be performed at any time by the appropriate personnel.

H.5.3.1 Change requests are submitted by any interested individual or organization to the respective national representative using the form included in Appendix 1 of this Annex. A list of national representatives will be maintained by the NATO Secretary.

H.5.3.2 The national representatives have disapproval authority over any proposed change from their respective nation prior to submission to the Custodian. If approved, the national representative endorses the change request and forwards the change request to the Custodian. If the national representative disapproves the proposal, the change proposal form is annotated with the reasons for the disapproval and it is returned to the submitter.

H.5.3.3 Direct submission by representatives from non-NATO nations is authorized. Change request submissions from individuals in non-NATO nations are submitted directly to the Custodian. The Custodian shall review the submissions and approve for 4607 CST consideration those proposals that have potential benefit to the NATO community. Rejected proposals are returned to the submitter with the reasons for rejection.

H.5.3.4 The Custodian provides the change requests to the 4607 AST for logging into the configuration management system. At the direction of the Custodian, proposed changes can be disseminated by the 4607 AST at any time for review and comment.

H.5.4 Regular 4607 CST Meetings; The 4607 CST shall meet regularly unless there are no outstanding change proposals. The Custodian will formally call the meeting based on the arrangements established by the 4607 AST.

H.5.4.1 Proposed changes are compiled and distributed to all national representatives no less than fourteen days prior to the meeting. National representatives then distribute the proposed changes to other interested individuals from the respective nation. National representatives and others are directed to establish impact of the proposed changes. The respective national positions are determined by procedures established by each nation. If a nation is unable to attend a 4607 CST meeting, the nation may submit written comments to the Custodian prior to the 4607 CST meeting. The comments will be provided to all attendees for consideration during deliberations.

H.5.4.2 During the 4607 CST meeting, each proposed change is discussed. Change proposals are discussed under direction of the Custodian. Change proposals can be deferred pending additional investigation/review, for which the Custodian assigns responsibility for addition study/review, or changes can be voted independently or in groups at discretion of Custodian.

H.5.4.3 Final configuration decisions are voted only by the national representatives. Substantive changes require unanimous consent of national representatives (or designated alternates) in attendance and voting. Editorial changes require a majority vote of national representatives in attendance and voting. Ties are decided by the Custodian.

H.5.4.3.1 The Custodian can defer the decisions of the national representatives for parent organization review, request additional discussion and review by the national representatives, or approve them immediately. Approved decisions are incorporated into an errata sheet for the STANAG by the 4607 AST. Approved changes are maintained in the errata sheet until the Custodian determines that sufficient items have been approved to warrant a change to the document. When deemed necessary by the Custodian, unapproved decisions are presented to the parent organization for final decision. Those changes approved by the Custodian or ratified by the parent organization are incorporated into the STANAG errata sheet by the 4607 AST.

H.5.5 Parent Organization Meetings; At the parent organization meetings, two topics are presented along with the general status of the STANAG 4607 activities.

H.5.5.1 The Custodian can present any change proposals approved or rejected by the 4607 CST for which the Custodian disagreed. The parent organization makes the final decisions on those items presented for which the Custodian disagreed with the 4607 CST national representatives. The 4607 AST then incorporates the revisions as directed by the parent organization.

H.5.5.2 In addition, the Custodian presents to the parent organization completed amendments to the STANAG along with a summary of the changes for ratification. All approved changes are incorporated into an errata sheet, until sufficient changes are approved to warrant a formal change to the document. Revisions with substantive changes are then submitted to the NATO Secretary to formally present the modifications through NSA to the nations for ratification. Revisions with only editorial changes are considered ratified with parent organization approval. Regardless of the ratification process used, after ratification, the Secretary posts the revised STANAG to the GMTIF web page and submits it to the Chairman of the NSA for promulgation.

H.6 Meeting Procedures

H.6.1 All meetings will be conducted in English. Those nations requiring the materials in different languages are responsible for translating the materials. Attendees to the meetings should be proficient enough in English to contribute to the meeting in English.

H.6.2 All meetings will be announced with a minimum of 60 days notice.

H.6.3 The quorum for approving changes for submission to the parent organization is 2 nations formally represented by approved representatives or their alternates.

H.6.4 Minutes of all formal meetings will be distributed within 14 days of the completion of the meeting. The minutes will include a record to document approved and disapproved changes, identify the status of all outstanding changes, and identify issues to be taken forward to the parent organization.

H.6.5 If, because of disagreement between the Custodian and the majority of national representatives, items are taken forward to the parent organization for a final decision, the Custodian and 4607 AST will prepare a memorandum for record, distributed to all national representatives, which will identify results of the parent organization discussions/decisions, and provide status of all changes. This memorandum will be disseminated to the national representatives within 14 days of the parent organization meeting.

Appendix 1 - Change Proposal Form

STANDARDIZATION DOCUMENT CHANGE PROPOSAL

INSTRUCTIONS

1. Change proposals may be submitted on this form through either mail or telefax, or by electronic mail following the same order and content as this form.
2. Originator completes sections 1-16.
3. Originator forwards to the respective national representative. National representative is official representative to 4607 CST, or if none from the originator's nation, then the representative to the Joint Capability Group for ISR (JCGISR). (See the NATO NAFAG JCGISR Internet web page for names and addresses.)
4. National representative approves or rejects proposal from their nation by completing sections 17-25.
   - Approved proposals are forwarded to the STANAG 4607 Custodian.
   - Rejected proposals are annotated with the reason for disapproval and returned to the originator.

Note: This form may be used to submit changes to any document included in the STANAG 4607 data set. This form may not be used to request copies of these documents. The documents are available on the NATO NAFAG JCGISR Internet home page (www.nato.int/structur/AC/224/home.htm), or through normal NATO document distribution channels.

RECOMMENDED CHANGE: (continue on additional sheets as necessary) page | | of | |

1. Document Number:	2. Document Version/Release Number:	3. Document Date:
4. Document Title:		
5. Proposed Change to: (Section, Paragraph, Line, Page)		6. Change Class: Substantive | | Editorial | |
7. Current Wording:	8. Proposed Wording:	
9. Reason/Rationale:		

10. Originator's Name:	13. Originator's Telephone Number:
11. Originator's Organization:	14. Originator's Telefax Number:
12. Originator's Mailing Address:	15. Originator's E-Mail Address:
	16. Date Submitted:
17. Nat'l Rep Name:	20. Nat'l Rep Telephone Number:
18. Nat'l Rep Organization:	21. Nat'l Rep Telefax Number:
19. Nat'l Rep Mailing Address:	22. Nat'l Rep E-Mail Address:
	23. Date of Approval/Rejection:

24. Change Proposal: Approved |__| Rejected: |__|
25. Rejection Rationale:

Mail, Telefax, or E-Mail Change Proposals To: STANAG 4607 Custodian	26. Date Logged by 4607 AST/initials:

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ANNEX I STANAG 4607 Reference Library Programming Guide

This Annex provides guidance for using the STANAG 4607 reference libraries. The libraries are intended to facilitate the implementation and integration of the STANAG 4607 format. The functions provided by the libraries can take a buffer of binary data in the STANAG 4607 format and parse it into data structures appropriate for different computing platforms. This description serves as a guide to using the libraries to support STANAG 4607 input and/or output in different applications.

I.1 Project Files

The project files to be included are:

- `include/swap.h` containing macros for Byte swapping between little Endian and big Endian platforms
- `include/ccvt.h`, a header file containing common measurement conversion functions
- `include/decode.h`, a header file containing functions to decode data from the STANAG 4607 binary data types to platform specific equivalents
- `include/encode.h`, a header file containing functions to encode platform specific data formats into their STANAG 4607 binary equivalents
- `include/cgmti.h`, the main header file containing most of the STANAG 4607 data structures and functions to read and write to binary data buffers
- `include/CGMTI_platform_types.h` containing definitions of the constants corresponding to various platform types enumerated in the STANAG 4607 specification
- `include/CGMTI_radar_modes.h` containing definitions of the constants corresponding to the various radar modes enumerated in the STANAG 4607 specification
- `include/debug.h`, a header file containing functions to write out human readable formmatted descriptions of STANAG 4607 data structures for debugging and verification

- `src/ccvt.c`, the source code for the common measurement conversions

- `src/decode.c`, the source code for the functions that decode STANAG 4607 binary formats

- `src/encode.c`, the source code for the functions that encode STANAG 4607 binary formats

- `src/cgmti.c`, the source code for the functions that parse STANAG 4607 data structures from data buffers and write STANAG 4607 data structures to data buffers

- `src/debug.c`, the source code for the debugging and verification functions

I.2 Reading Walkthrough

To interpret binary data as STANAG 4607 data, the following steps will help to understand how the library works. Starting with a raw data buffer (read from the disk, or received from a TCP/UDP stream, etc.), 4607 data can be extracted for use by the program. It is important before each call that the user ensures that there is sufficient data in the buffer for each call, since the library checks to make sure that NULL pointers aren't being passed. The sizes of the different structures in binary format can be found in the STANAG 4607 standard.

1. Allocate (or pass by reference) a `CGMTI_PacketHeader` structure and send it to `ReadCGMTI_Hdr` with the data buffer. The data buffer will be incremented by the number of Bytes returned by `ReadCGMTI_Hdr`. The complete size of the data buffer should be at least the number in `CGMTI_PacketHeader.size.`

2. Allocate (or pass by reference) a `CGMTI_SegmentHeader` structure and send it to `ReadCGMTI_Shdr` with the data buffer. The data buffer will be incremented by the number of Bytes returned by `ReadCGMTI_Shdr`. The Bytes remaining in the data buffer should be at least `CGMTI_SegmentHeader.size` - the return value.

3. Each Segment has a type associated with it, `CGMTI_SegmentHeader.type`. Table 3-6 of Chapter 3 of the standard lists the valid values and the appropriate types for parsing. For each

segment, use one of the following functions to parse the data that it contains.

- `ReadCGMTI_Mission` for Mission Segments (type = 1)
- `ReadCGMTI_Dwell` for Dwell Segments (type = 2)
- `ReadCGMTI_HRR` for HRR segments (type = 3)
- `ReadCGMTI_Job` for Job Definition segments (type = 5)
- `ReadCGMTI_Freetext` for Free Text segments (type = 6)
- `ReadCGMTI_TestStatus` for Test and Status segments (type = 10)
- `ReadCGMTI_ProcHistory` for Processing History segments (type = 12)
- `ReadCGMTI_PlatLocation` for Platform Location segments (type = 13)
- `ReadCGMTI_JobReq` for Job Request segments (type = 101)
- `ReadCGMTI_JobAck` for Job Acknowledgement segments (type = 102)

Currently unsupported are the Reserved Segment (type = 4), Low Reflectivity Index Segment (type = 7), Group Segment (type = 8), Attached Target Segment (type = 9), and System-Specific Segment (type = 11).

4. If there is still space left in the packet (as determined by taking the size specified in the packet header, subtracting the size of the header and the size of the segments processed so far), then the data buffer should be parsed for additional segments. Examples of this can be found in the `CGMTIRead_Record` function of `src/xlator.c`.

I.3 Writing Walkthrough

To go from the structures provided in the STANAG 4607 reference implementation to the binary format is more complicated. The required parameters are the desired packet size, the per target size if sending targets (which varies according to the existence mask) and similarly for HRR. Using the binary size of the structures, it is possible to calculate the size of the full packet and each segment, generate packet and segment headers, and use the `Write` versions of each of the `Read` functions listed above to encode into the binary format.
Examples of this can be found in the `EX_2_CGMTI` function of `src/xlator.c`.

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ANNEX J Guidelines for Adding New Capabilities to STANAG 4607

J.1 General.

J.1.1 This Annex describes the methodology for adding new capabilities, in the form of new extensions, to STANAG 4607. These changes will be required to accommodate new sensors, processing techniques, and sensor modes of operation. The methodology is a multi-step process, requiring proposals for new extensions from the users and approval of those extensions by the STANAG 4607 Custodial Support Team (CST) and Custodian before they can be added to the STANAG.

J.1.2 Within this Annex, the term “extension” is used in the general sense to indicate either “segments” or “extensions”. Note that the usage of these terms in STANAG 4607 is not to be confused with the usage of similar terms in STANAG 4545, as described in Para. B.2 in Annex B of this document.

J.2 Background

J.2.1 The STANAG 4607 CST has adopted an approach for adding new capabilities to STANAG 4607 as “Extensions” for specific applications, where each extension is linked to the segments delineated in Part 2 of Annex A to STANAG 4607. Possible extensions for future editions of the STANAG could include an Advanced Dwell Segment for spaceborne and advanced airborne sensors and a Maritime Mode Segment, where the extensions provide additional information not available in existing segments. As an example, a potential Advanced Dwell Segment could provide the capability of reporting Target Reports in radar coordinates (AZ/EL) format, and a potential Maritime Mode Extension could contain information appropriate to a maritime application. The extensions will include appropriate identifying data such as Revisit Index, Dwell Index, and MTI Report Index to allow them to be linked back to the corresponding Dwell Segment and Target Reports within that segment. Section L.3 below describes the methodology and rules for adding new capabilities to the STANAG.

J.2.2 Although the preferred approach for the future growth of STANAG 4607 is to add new capabilities as extensions of existing segments, there may be a need to add totally new segments as well. In this case, the new segments would be also be added as described in Paragraph M.3.

J.3 Rules for Adding New Capabilities.

J.3.1 The general rules for adding new capabilities to STANAG 4607 are as follows:

(1) The **ORIGINATOR** registers the name, purpose, objective (rationale), and details of a (potential) new extension with the **CST**. Details of the extension shall include field names, descriptions, figures, etc., and shall be submitted in accordance with the standard Change Request Form shown in Appendix 1 to Annex H of this document.

(2) The **CUSTODIAN** and the **CST** review the proposed extension for suitability to STANAG 4607 and either (a) approve it for further action or (b) disapprove it and provide the reason for disapproval to the originator.

(3) After provisional acceptance by the **CUSTODIAN** and the **CST,** the extension is entered into the *Compendium of Registered Extensions to the NATO Ground Moving Target Indicator (GMTI) Format* and designated as a “Registered” extension. The **CUSTODIAN** assigns an appropriate extension name and an identifying number within the Header Segment. If the proposed extension is subsequently rejected by the **CST**, the “provisional” number can be re-used for future extensions.

(4) At this point, GMTI **USER** organizations can use the “Registered” extension for implementation, test, and validation and report the results of the test and validation efforts to the **CUSTODIAN** and the **CST.**

(4) After validation of the “Registered” extension by the **USER** and final acceptance by the **CUSTODIAN** and the **CST**, the extension will be designated as “Controlled” and moved from the *Compendium of Registered Extensions to the NATO Ground Moving Target Indicator (GMTI) Format* to the “Registry of Controlled Extensions for STANAG 4607” in Annex L of this document.

(5) As later editions of STANAG 4607 are developed, the Controlled Extensions in Annex L may subsequently be moved from the Annex to appropriate locations within the STANAG itself.

J.3.2 Requests for adding new capabilities to STANAG 4607 will be submitted to the STANAG 4607 CST using the Standardization Document Change Proposal Form shown in Appendix 1 to Annex H of this document.

ANNEX K Glossary of Terms

Acronyms, Terms, and Definitions

The following acronyms are used for the purpose of this agreement.

A	Alphabetic (STANAG 4607 Data Convention)
AEDP	Allied Engineering Documentation Publication
AESA	Active Electronically Steered Antenna
AG IV	Air Group IV for ISR (now JCGISR)
AGL	Above Ground Level
AGS	Alliance Ground Surveillance
AIP	ASARS Improvement Program
AP	Allied Publication
APY-3	Joint STARS Sensor
APY-6	P-3C Sensor
ARL-M	Airborne Reconnaissance Low – Multi-Mission; US Surveillance Platform
ASARS-2A	Advanced Synthetic Aperture Radar System Version 2A
AST	Administrative Support Team
ASTOR	Airborne Stand-off Radar; UK GMTI Surveillance Platform
ATR	Automatic Target Recognition
AUT	Application Under Test
B	Signed Binary Decimal (STANAG 4607 Data Convention)
BA	Binary Angle (STANAG 4607 Data Convention)
BCS	ISO Basic Character Set
BIIF	Basic Image Interchange Format
C2	Command and Control
C4	Command, Control, Communication, and Computers
CCR	Common Core Requirements
CE	Controlled Extension
CG	Center of Gravity
CGMTI	Common Ground Moving Target Indicator (now GMTIF)
CONOP	Concept of Operation
CPI	Coherent Processing Interval
CRESO	Complesso Radar Eliportato per la Sorveglianza; Italian GMTI Surveillance Platform
CST	Custodial Support Team
DES	Data Extension Segment

DGM	Digitales Gelandemodell
DIS	Distributed Interactive Simulation
DISA	Defense Information Systems Agency
DTED	Digital Terrain Elevation Data
DTG	Date Time Group
E	Enumeration (STANAG 4607 Data Convention)
ESA	Electronically Steered Antenna
ECEF	Earth-Centered Earth-Fixed
ECI	Earth-Centered Inertial
ECR	Earth Centered Rotating
ECS	Extended Character Set
EGM96	Earth Gravitational Model 1996
ENDO/EXO	Operating Modes of the ASTOR Sensor
EMTI	Enhanced MTI
ERP	Earth Reference Point
FAQ	Frequently Asked Question
FIPS	Federal Information Processing Standard
FL	Flag (STANAG 4607 Data Convention)
FTI	Fixed Target Indication
GEI	Geocentric Equatorial Inertial
GEO	Geographic
GEO96	Geoid Gravitational Model 1996
GMST	Greenwich Mean Sidereal Time
GMTI	Ground Moving Target Indication/Indicator
GMTIF	Ground Moving Target Indicator Format (STANAG 4607)
GPS	Global Positioning System/Satellite
GRCA	Ground Referenced Coverage Area
HISAR	ARL-M Sensor
HORIZON	Helicoptere d’Observation Radar et d’Investigation sur Zone ; French GMTI Helicopter
HRR	High Range Resolution
I	Human-System Interface
HT	Targeting and Tracking with HRR (Exploitation Class)
HUR	High Update Rate
I	Integer (STANAG 4607 Data Convention)
IAW	In Accordance With
I & Q	In-phase and Quadrature
ID	Identification
IMWG	Imagery Working Group
ISAR	Inverse Synthetic Aperture Radar
ISO/IEC	International Organization for Standardization / International Electrotechnical Commission
ISR	Intelligence, Surveillance, and Reconnaissance

ITHD	Interferometric Terrain Data Height
ITU	International Telecommunication Union
JCGISR	Joint Capability Group on Intelligence, Surveillance, and Reconnaissance (formerly Air Group IV for ISR)
JSTARS	Joint Surveillance Target Attack Radar System
LOS	Line of Sight
LRI	Low Reflectivity Index
lsb	Least Significant Bit
MC2A	Multi-Sensor Command and Control Aircraft (now E-10)
MDV	Minimum Detectable Velocity
MIC	Minimum Implementation Capability
MIL-STD	Military Standard
MP-RTIP	Multi-Platform Radar Technology Improvement Program
msb	Most Significant Bit
MSL	Mean Sea Level
MTI	Moving Target Indication/Indicator
MTIm	Moving Target Imaging
N	Numeric (STANAG 4607 Data Convention)
NASA	National Aeronautics and Space Administration
NATO	North Atlantic Treaty Organization
NC3A	NATO Consultation, Command, and Control Agency
NED	North, East, Down Local Coordinate System
NIIA	NATO ISR Interoperability Architecture
NGA	National Geospatial-Intelligence Agency
NITF	National Imagery Transmission Format
NPIF	NATO Primary Imagery Interface (STANAG 7023)
NSA	NATO Standardization Agency
NSIF	NATO Secondary Imagery Format (STANAG 4545)
NSILI	NATO Standard Library Interface (STANAG 4559)
NSS	Narrow Sector Search
PDU	Protocol Data Unit
POC	Point of Contact
PRF	Pulse Repetition Frequency
PPI	Plan Position Indicator
PPLI	Precise Participant Location and Identification
RADARSAT2	Radar Satellite Version 2 ; Canadian SAR/GMTI Surveillance Platform
RRCA	Radar Referenced Coverage Area
RSR	Radar Service Request.
RT	Real Time
RTIP	Radar Technology Improvement Program
S	Signed Integer (STANAG 4607 Data Convention)

SA	Situation Awareness (Exploitation Class); Signed Binary Angle (STANAG 4607 Data Convention)
SAR	Synthetic Aperture Radar
SATC	Small Area with Target Classification
SATCOM	Satellite Communications
SBS	Single Beam Scan
SEDRIS	Synthetic Environment Data Representation and Interchange Specification
SEZ	South-East-Zenith
SMTI	Surface Moving Target Indication; Swath Moving Target Indication
SNR	Signal to Noise Ratio
SRTM	Shuttle Reconnaissance Terrain Mapping
SS	Sector Search
SSR	Sensor Service Request
STANAG	Standardization Agreement (NATO)
STHD	Stereometric Terrain Data Height
TCS	Topocentric Coordinate System
TESAR	Predator UAV Sensor
TST	Technical Support Team
TT	Targeting and Tracking (Exploitation Class)
TUAV	Tactical Unmanned Aerial Vehicle
UAV	Unmanned Aerial Vehicle
UCAV	Unmanned Combat Aerial Vehicle
UDP	User Datagram Protocol
UGS	Unattended Ground Sensor
UHF	Ultra-High Frequency
UHRR	Ultra-High-Range Resolution
USAF	United States Air Force
USNO	United States Naval Observatory
UTC	Universal Time Coordinated
UTF-8	Unicode Transformation Format – 8-bit
WA	Wide Area
WAMTI	Wide Area Moving Target Indication
WAS	Wide Area Surveillance
WGS-84	World Geodetic System 1984
XML	eXtensible Markup Language
0xXX	Hexadecimal representation of a number, where “XX” is the hexadecimal code, to distinguish hexadecimal field entries from decimal or binary entries

ANNEX L Registry of Controlled Extensions, Headers and Segments for STANAG 4607

L.1 Scope.

This Annex provides a description of Controlled Extensions, Headers and Segments which have been approved for use with the STANAG 4607 format.

L.2 Overview of Controlled Extensions.

This section provides a general description of Controlled Extensions and how they relate to STANAG 4607, the NATO GMTI Format (GMTIF). Controlled Extensions provide additional information not available in the core set of headers and segments, and are used in conjunction with those headers and segments.

Controlled Extensions are Registered Extensions which have been previously listed in the *Compendium of Registered Extensions to the NATO Ground Moving Target Indicator (GMTI) Format* and subsequently implemented, tested, and validated by user organizations and approved by the STANAG 4607 Custodian and CST for use with the STANAG. The structure of the data fields for the Controlled Extensions conforms to the data and packet structure of the STANAG 4607 format. Controlled Extensions are used identically with the Packet Header and Segment Header and in conjunction with applicable Segments of the STANAG 4607 format.

Section L.4 of this Annex provides the tables, descriptions, and rules of use for each Controlled Extension. The extensions are transmitted as specified for each extension, as required for constructing a STANAG 4607 packet, and are used with and linked to the appropriate headers and segments. As specified for the core set of Headers and Segments, each table in this Annex includes columns for field identification, field type (e.g., “M” for Mandatory), field name, the number of Bytes and the format for each field, the value range for each field, and the unit of measure or comments (where appropriate).

L.3 Identification Of Controlled Extensions

This section provides the means for tracking Controlled Extensions as they are entered into the Registry.

L.3.1 Record of Controlled Extensions.

Table L-1 provides a record of each Controlled Extension to STANAG 4607. The first column of the table provides a paragraph reference in this Annex for each Controlled Extension. The Header Segment Designation column specifies the value for each Controlled Extension to be entered in the Value Range column of the Segment Header, Table 3-6 of Chapter 3 of the standard. The remaining columns provide the title of the extension, the date on which the extension was validated, and the approval date and approving authority for moving the extension from the Compendium of Registered Extensions to the Registry of Controlled Extensions.

Table L-1. Record Sheet for Controlled Extensions to STANAG 4607

Ref. Para.	Header or Segment Designation	Title Of Controlled Extension, Header or Segment	Date Of Submission	Submitted By	Date of Approval	Approved By	Comments
L.4.1	128	Advanced Dwell Segment	16 Oct 2006	S.C. Bygren	17 Jun 2008	L. A. Moore	
L.4.2	129	Advanced Job Definition	16 Oct 2006	S.C. Bygren	17 Jun 2008	L. A. Moore	
L.4.3	130	Advanced Platform Location	16 Oct 2006	S.C. Bygren	17 Jun 2008	L. A. Moore	
L.4.4	131	Target Centroid	30 Sep 2009	D.T. Bagley	17 Mar 2010	L. A. Moore	
L.4.5	132	Releasability	30 Sep 2009	D.T. Bagley	17 Apr 2010	L. A. Moore	
L.4.6							
L.4.7							
L.4.8							
L.4.9							
L.4.10							
L.4.11							

L.4 Descriptions of Controlled Extensions

This section provides tables and descriptions of Controlled Extensions for use with the core set of Headers and Segments identified in Chapter 3 of the standard.

(TO BE PROVIDED)

ANNEX M *Changes from Version to Version of STANAG 4607*

M.1 Errata Sheet No. 3 to STANAG 4607

This section provides Errata Sheet No. 3 to STANAG 4607 Edition 2. It shows the changes, modifications and updates made to STANAG 4607 Edition 3 from STANAG 4607 Edition 2.

NAT OTA

NATO Air Force Armaments Group (NAFAG)
Joint Capability Group on ISR (JCGISR)
GMTIF Custodial Support Team

ORIGINAL: ENGLISH
5 February 2010

ERRATA Sheet
GMTIF CST (JCGISR)/E-2

NATO Joint Capability Group - ISR
NATO Ground Moving Target Indicator Format
Custodial Support Team
Errata Sheet No. 3 to STANAG 4607 Edition 2

This document defines known editorial and/or technical errors in STANAG 4607 Edition 2 as of the date of release. The following changes were incorporated into STANAG 4607 Edition 3.

Users of STANAG 4607 should be aware that these corrections will be included in the next official release of the STANAG 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 the STANAG and forms the baseline for use of the standard.

It should be noted that approved administrative and/or technical changes are combined under 'Approve Changes'. It is expected that changes will be collected in the form of this Errata Sheet until the Custodian and the 4607 Custodial Support Team (4607 CST) decides that sufficient changes are identified to warrant either an amendment or a new edition. A new edition will incorporate all outstanding changes into a ratification draft for the next edition and this draft will be forwarded to the 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.

Document Name:		STANAG Number:	
	NATO Ground Moving Target Indicator Format		STANAG 4607
Edition Number:		**Amendment Number:**	
	Edition 2		None

Administrative Changes:

The following changes were approved by the Custodian and the 4607 Custodial Support Team since the ratification of Edition 3 of the STANAG in Sep 2010. These changes will be incorporated into the next amendment or edition as deemed appropriate by the Custodian and the 4607 Custodial Support Team.

2.2 Job Definition Segment.

The Job Definition Segment (Table 3-14 of the standard) provides the means for the platform to pass information pertaining to the sensor job that will be performed and details of the location parameters (terrain elevation model and geoid model) used in the measurement. It includes a definition of the geographic area for sensor service, the Bounding Area, which is defined as a four-corner polygon, with the four points of the polygon chosen to define a convex quadrilateral. The Job Definition Segment shall be sent before the first visit of a job with the bounding area representing the tasked area, and shall be updated and resent with the bounding area set to represent the actual scanned area when the scanned area differs from the area sent in the previous Job Definition Segment. The Job Definition Segment shall be sent periodically at least once every 30 seconds thereafter.

<table>
<tr><th>Item No.</th><th>Document Location</th><th>Current Text</th><th>New Text</th></tr>
<tr><td>1</td><td>Page A-ii, Table of Contents, Para. 2.5</td><td>Entries for paragraph 2.5, as shown in the “Change FROM” block below.</td><td>Entries for paragraph 2.5, as shown in the “Change TO” block below.</td></tr>
<tr><td></td><td colspan="3">Change FROM:

2.5 HRR Segment
2.5.1 Revisit Index
2.5.2 Dwell Index
2.5.3 Last Dwell of Revisit
2.5.4 MTI Report Index
2.5.5 Number of Target Scatterers
2.5.6 Mean Clutter Power Relative to Peak Scatterer
2.5.7 Detection Threshold Relative to Peak Scatterer
2.5.8 Range Resolution
2.5.9 Range Bin Spacing
2.5.10 Doppler Resolution
2.5.11 Doppler Bin Spacing
2.5.12 Compression Flag
2.5.13 Range Weighting Function Type
2.5.14 Doppler Weighting Function Type
2.5.15 Maximum Pixel Power
2.5.16 <HRR Scatterer Records>
2.5.16.1 Scatterer Magnitude
2.5.16.2 Scatterer Phase
2.5.16.3 Range Index
2.5.16.4 Doppler Index</td></tr>
</table>

<table>
<tr><th>Item No.</th><th>Document Location</th><th>Current Text</th><th>New Text</th></tr>
<tr><td></td><td colspan="3"><u>Change TO:</u>

2.5 HRR Segment
2.5.1 Existence Mask
2.5.2 Revisit Index.
2.5.3 Dwell Index.
2.5.4 Last Dwell of Revisit
2.5.5 MTI Report Index
2.5.6 Number of Target Scatterers
2.5.7 Number Of Range Samples/Total Scatterers
2.5.8 Number of Doppler Samples
2.5.9 Mean Clutter Power Relative to Peak Scatterer
2.5.10 Detection Threshold Relative To Peak Scatterer
2.5.11 Range Resolution
2.5.12 Range Bin Spacing
2.5.13 Doppler Resolution
2.5.14 Doppler Bin Spacing / PRF
2.5.15 Center Frequency
2.5.16 Compression Flag
2.5.17 Range Weighting Function Type
2.5.18 Doppler Weighting Function Type
2.5.19 Maximum Pixel Power
2.5.20 Maximum RCS
2.5.21 Range of Origin
2.5.22 Doppler of Origin
2.5.23 Type of HRR/RDM
2.5.24 Processing Mask
2.5.25 Number of Bytes - Magnitude
2.5.26 Number of Bytes - Phase
2.5.27 Range Extent In Pixels
2.5.28 Range To Nearest Edge In Chip
2.5.29 Index Of Zero Velocity Bin
2.5.30 Target Radial Electrical Length
2.5.31 Electrical Length Uncertainty
2.5.32 <HRR Scatterer Records>
2.5.32.1 Scatterer Magnitude
2.5.32.2 Scatterer Phase
2.5.32.3 Range Index
2.5.32.3 Doppler Index</td></tr>
<tr><td></td><td>Page A-ii, Table of Contents, Para. 2.6</td><td>2.6 Range-Doppler Segment (Reserved – Under Development)</td><td>2.6 Reserved</td></tr>
</table>

Item No.	*Document Location*	*Current Text*	*New Text*
	Page A-2, Para. 1.1.2, second paragraph of text	This document shall be used in conjunction with the separately published Allied Engineering Documentation Publication No. 7 (AEDP-7), the NATO Ground Moving Target Indicator (GMTI) Format Implementation Guide. The AEDP provides additional technical references for the use of STANAG 4607. Technical sections of the AEDP include the following: • a rationale and notional employment concept for using the GMTIF; • a suggested technique for embedding the GMTIF data into NATO imagery formats; • a preliminary description of the data format for a Range-Doppler Chip Segment; • an overview of coordinate location systems; • suggested groupings of GMTIF data fields to support five data exploitation classes; • communications issues for dissemination of the GMTIF; and • frequently asked questions pertaining to STANAG 4607. Non-technical sections of the AEDP include: • acquisition guidance; • test and validation procedures; • a configuration management plan; • sample software; and • a glossary of terms.	This document shall be used in conjunction with the separately published Allied Engineering Documentation Publication No. 7 (AEDP-7), the STANAG 4607 NATO Ground Moving Target Indicator Format (GMTIF) Implementation Guide. AEDP-7 provides implementation guidance, test and validation procedures, a configuration management plan, and amplifying information for STANAG 4607. It includes a notional employment concept for using the GMTIF, a suggested technique for embedding GMTIF data into NATO imagery formats, suggested groupings of GMTIF data fields to support three data exploitation classes, and tutorial information pertaining to the GMTIF. AEDP-7 also includes a Registry of Controlled Extensions which have been approved for use with STANAG 4607.
	Page A-3, Table 1-3, entry in Segment Name column, entry for Ref. Paragraph 2.6	Range-Doppler Segment (Includes Range-Doppler Scatterer Data) *	Reserved

Item No.	*Document Location*	*Current Text*	*New Text*
	Page A-4, Para. 1.3.1, eighth paragraph of text	**The High Range Resolution (HRR) Segment provides data on HRR measurements, which may be performed in conjunction with MTI detections. It includes HRR Scatterer Data pertaining to the HRR measurements.**	The High Range Resolution (HRR) Segment provides data on HRR and Range-Doppler measurements, which may be performed in conjunction with MTI detections. It includes HRR Scatterer Data pertaining to the HRR measurements.
	Page A-4, Para. 1.3.1, thirteenth paragraph of text	**The Range-Doppler Segment is under development and appears in the AEDP for STANAG 4607 as a preliminary description only. It provides data on HRR reports and can also be used for High-Range Resolution Inverse Synthetic Array Radar (HRR-ISAR) targets.**	DELETE the text paragraph in its entirety
	Page A-6, Figure 1-1, figure heading	**Figure 1-1. Notional Data Transmission for GMTIF Data (currently in Times New Roman font)**	Figure 1-1. Notional Data Transmission for GMTIF Data (change to Arial font)
	Page A-9, Table 2-1.1, table heading	Table 2-1.1. Packet Security Classification (currently in Times New Roman font)	Table 2-1.1. Packet Security Classification (change to Arial font)
	Page A-9, Table 2-1.1	1 TOP SECRET 2 SECRET 3 CONFIDENTIAL 4 RESTRICTED 5 UNCLASSIFIED 6 NO CLASSIFICATION	1 TOP SECRET 2 SECRET 3 CONFIDENTIAL 4 RESTRICTED 5 UNCLASSIFIED
	Page A-9, Table 2-1.2, entry in DIGRAPH column for entry Country Codes defined in FIPS Publication 10-4 in CLASSIFICATION SYSTEM column	BE, CA, DA, FR, GM, GR, IS, IT, LU, NL, NO, PO, SP, TR, GB, US	BE, BU, CA, EZ, DA, EN, FR, GM, GR, HU, IC, IT, LG, LH, LU, NL, NO, PL, PO, RO, LO, SI, SP, TU, UK, US
	Page A-10, Table 2-1.3, entry in CODEWORD column for entry 0x8000 in VALUE (HEX) column	REL 9-EYES (CAN, FRA, DEU, NLD, NOR, ESP, TUR, GBR, USA)	REL 9-EYES (CAN, FRA, DEU, ITA, NLD, NOR, ESP, GBR, USA)
	Page A-12, Table 2-2, "Value Range" column	**4 = Range-Doppler Segment**	4 = Reserved
	Page A-18 Figure 2-1, All Columns	2 | 0 | Spare | N/A | 0	2 | 0 | D32.18 | O | 0,1

Item No.	Document Location	Current Text	New Text
	Page A-19, Section 2.4.2 Revisit Index (D2) (M)	The sequential count of a revisit of the bounding area for a given job ID, where a Revisit Index of "0" indicates the first revisit.	The sequential count of a revisit of the bounding area in the last sent Job Definition Segment, where a Revisit Index of "0" indicates the first revisit. In other words, if the sensor on that job actually is revisiting the last Job Definition Segment's bounding area, increment the count, otherwise reset to "0."
	Page A-21, Para. 2.4.14, first paragraph of text	**Standard deviation of the sensor altitude estimate (field D11), expressed in centimeters.**	Standard deviation of the sensor altitude estimate (field D9), expressed in centimeters.
	Page A-26 Table 2-4.1, All Columns	***<<D32.18 field does not exist>>***	**D32.18 | O | Target Radar Cross Section | 1 | S8 | -128 to +127 dB/2**
	Page A-28, Para. 2.4.32.8, first paragraph of text	**Half the velocity aliasing period. For most radars this is calculable as the effective PRF (i.e., the product of PRF's on CPI's for which the target was detected) multiplied by the effective sensor wavelength divided by four. The target wrap velocity permits trackers to un-wrap velocities for targets with line-of sight components large enough to exceed the first velocity period. When the target's wrap velocity is low compared to the target's expected line-of-sight velocity the tracker may consider adding multiples of twice the target wrap velocity to field D32.7.**	**Half the velocity aliasing period, expressed in centimeters per second. For most radars this is calculable as the effective PRF (i.e., the product of PRF's on CPI's for which the target was detected) multiplied by the effective sensor wavelength divided by four. The target wrap velocity permits trackers to un-wrap velocities for targets with line-of sight components large enough to exceed the first velocity period. When the target's wrap velocity is low compared to the target's expected line-of-sight velocity the tracker may consider adding multiples of twice the target wrap velocity to field D32.7.**
	Page A-30, Table 2-4.2 Target Classification	… 6 — Maritime, Live Target … 9-125 — Reserved … 134 — Maritime, Simulated Target … 137-253 — Reserved …	… 6 — Large, Multiple-Return Live Target … 9 — Person, Live Target 10 — Vehicle, Live Target 11 — Animal, Live Target 12-125 — Reserved … 134 — Large, Multiple-Return Simulated Target … 137 — Person, Simulated Target 138 — Vehicle, Simulated Target 139 — Animal, Simulated Target 140 — Tagging Device 141-253 — Reserved …

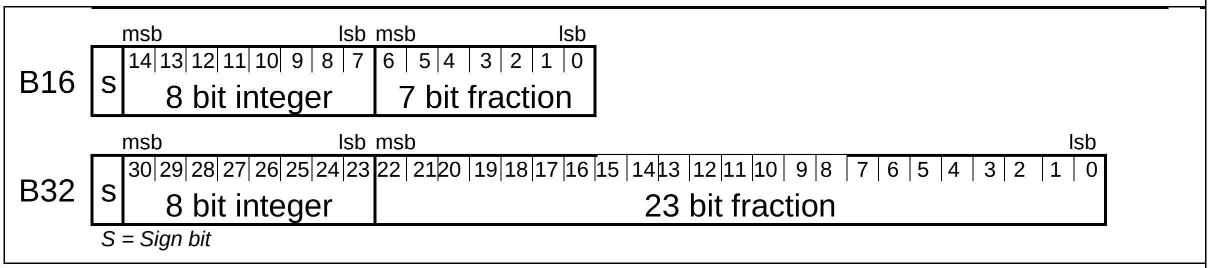
Item No.	***Document Location***	***Current Text***	***New Text***
	Page A-31 Paragraph 2.4.32.16	The Truth Tag- Application is the Application Field truncated to 8 bits, from the Entity State Protocol Data Unit (PDU) used to generate the MTI Target. If the MTI Target is the result of more than one Entity State PDU, then the value for the target with the highest instantaneous radar return is passed in this field. A value of all zeros indicates that no information is available regarding the entity state PDU that was used to generate the MTI Target being passed. For simulated data, the truth tag relates targets back to the truth data, which is represented using Distributed Interactive Simulation (DIS) Entity State PDUs. Field D32.16 is Conditional and is sent only if the MTI Target in the Report is simulated. It is always sent with field D32.17.	The Truth Tag- Application is the Application Field truncated to 8 bits, from the Entity State Protocol Data Unit (PDU) used to generate the MTI Target. If the MTI Target is the result of more than one Entity State PDU, then the value of the target with the highest instantaneous radar return is passed in this field. A value of all zeros indicates that no information is available regarding the entity state PDU that was used to generate the MTI Target being passed. For simulated data, the truth tag relates targets back to the truth data, which is represented using Distributed Interactive Simulation (DIS) Entity State PDUs. If the target classification field is classified as 140 then the truth tag application field will indicate the battery strength of the tagging device. The battery strength will be represented as a percentage of charge from 1-100. A value of 0 will mean that the tagging device does not have the ability to monitor its battery strength. Field D32.16 is Conditional and is sent only if the MTI Target in the Report is simulated or a tagging device is detected. It is always sent with field D32.17.

Item No.	Document Location	Current Text	New Text
	Page A-31 Paragraph 2.4.32.17	The Truth Tag - Entity is the Entity Field from the Entity State PDU used to generate the MTI Target. It is passed as a 32 bit value, in the same format as the Entity State PDU Identity value. A value of all zeros indicates that no information is available regarding the Entity State PDU that was used to generate the MTI Target being passed. For simulated data, the Truth Tag relates targets back to the truth data, which is represented using DIS Entity State PDUs. Field D32.17 is conditional and is sent only if the MTI Target in this report is simulated. It is always sent with field D32.16.	The Truth Tag - Entity is the Entity Field from the Entity State PDU used to generate the MTI Target. It is passed as a 32 bit value, in the same format as the Entity State PDU Identity value. A value of all zeros indicates that no information is available regarding the Entity State PDU that was used to generate the MTI Target being passed. For simulated data, the Truth Tag relates targets back to the truth data, which is represented using DIS Entity State PDUs. If the target classification field is 140 then the truth tag entity field will be the tag identification number transmitted by a tagging device. Field D32.17 is conditional and is sent only if the MTI Target in this report is simulated or a tagging device is detected. It is always sent with field D32.16.
	Page A-32 Paragraph 2.4.32.18	*<<Para 2.4.32.18 does not exist>>*	2.4.32.18 Target Radar Cross Section (D32.18) (O). Estimated radar cross section (RCS) of the target return, expressed in half decibels (dBsm). Field D32.18 is Optional
	Pages A-32 to A-35, Paras. 2.5 to 2.5.16.4	**DELETE current text in paragraphs 2.5 to 2.5.16.4**	REPLACE with new paragraphs 2.5 to 2.5.32.4 in Annex A of this document
	Page A-35, Para. 2.6, paragraph heading	2.6 <u>Range-Doppler Segment (Reserved – Under Development).</u>	2.6 <u>Reserved.</u>
	Page A-35, Para. 2.6, text paragraph	(The Range-Doppler Segment is under development and is not included in the Data Format Document at this time. A preliminary description of the data format for a Range-Doppler Segment is included in the AEDP for STANAG 4607.)	DELETE the text paragraph in its entirety

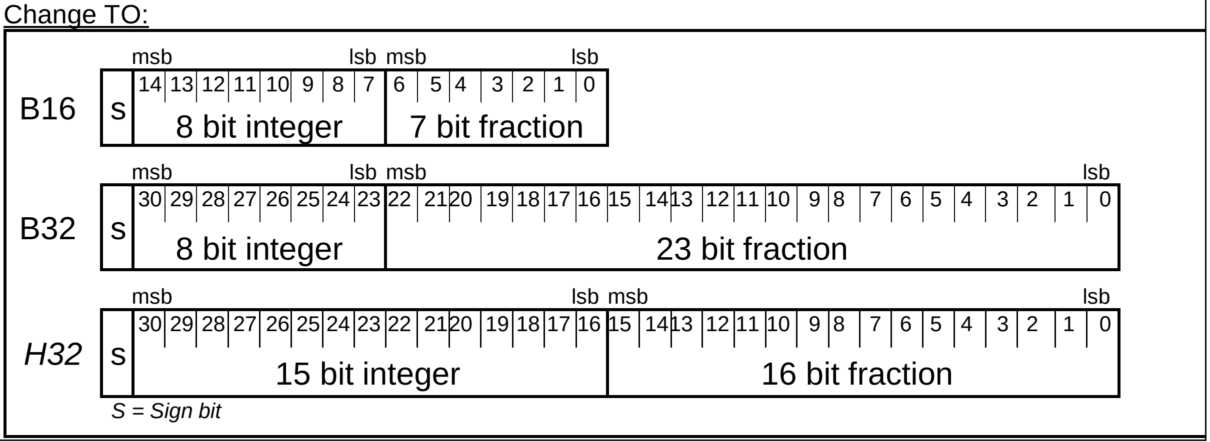
Item No.	*Document Location*	*Current Text*	*New Text*
	Page A-35, Section 2.7 - Job Definition Segment, first paragraph, third sentence	The Bounding Area shall remain fixed for a given Job ID. The Job Definition Segment shall be sent before the first revisit of a job and shall be sent periodically at least once every thirty seconds thereafter.	The Job Definition Segment shall be sent before the first visit of a job with the bounding area representing the tasked area, and shall be updated and resent with the bounding area set to represent the actual scanned area when the scanned area differs from the area sent in the previous Job Definition Segment. The Job Definition Segment shall be sent periodically at least once every 30 seconds thereafter.
	Page A-38, Table 2-7.1	… Available for Future Use 25-254 No Statement 255	… IMASTER GMTI 25 AN/ZPY-1 (STARLite) 26 VADER 27 Available for Future Use 28-254 No Statement 255
	Page A-41, Section 2.7.14, Table 2-7.2	… MTI EXO ASTOR 94 MTI ENDO/EXO ASTOR 95 Available for Future Use Reserved 96-99	… WAS MTI EXO ASTOR 94 WAS MTI ENDO/EXO ASTOR 95 SS MTI EXO ASTOR 96 SS MTI ENDO/EXO ASTOR 97 Available for Future Use 98-99
	Page A-41, Section 2.7.15, Nominal Revisit Interval (J15)	Specifies the nominal revisit interval for the job ID, expressed in deciseconds (tenths of seconds).	Specifies the nominal revisit interval for the job ID, expressed in deciseconds (tenths of seconds). If the sensor is not revisiting the previous area, the interval shall be reset to 0.
	Page A-42, Para. 2.7.21, text paragraph, first sentence	**Nominal standard deviation of the slant range of the reported detection, expressed in meters.**	Nominal standard deviation of the slant range of the reported detection, expressed in centimeters.
	Page A-49, Table 2-14.1, table heading	Table 2-14.1. Processing Records (currently in Times New Roman font)	Table 2-14.1. Processing Records (change to Arial font)
	Page A-52, Para. 2.15, text paragraph, second sentence	**It shall be sent as required during periods in which the sensor is not collecting data, such as enroute to an orbit location or during a turn.**	It shall be sent as required during periods in which the sensor is not collecting data, such as enroute to an orbit location, during a turn, or any other time at which platform location is required.
	First page of Annex B	**No page number**	ADD page “B-i” in Footer at bottom of page
	New Page B-i	TABLE OF CONTENTS is currently in Times New Roman font	CHANGE entire TABLE OF CONTENTS to Arial font
	New Page B-i, Table of Contents, Para. 6.5	6.5 Signed Binary Decimal (B16-B32) Definitions	6.5 Signed Binary Decimal (B16-B32 and H32) Definitions
	Page B-21, Table 6-2, Signed Integer Data Formats	*S8, S16, S32, S64* (currently in Times New Roman font)	*S8, S16, S32, S64* (change to Arial font)

Item No.	*Document Location*	*Current Text*	*New Text*
	Page B-22, Para. 6.5, <u>Signed Binary Decimal (B16-B32) Definitions</u>	6.5 <u>Signed Binary Decimal (B16-B32) Definitions.</u> Signed Binary Decimals B16-B32 are signed binary decimals, with the first bit providing the sign, the next set of 8 bits providing the integer part, and the remaining bits providing the fractional part. Data field lengths are 16 or 32 bits, numbered from 0 to 14 or 30, plus the sign bit. The fraction parts are numbered from 0 representing the LSB to 6 or 22, representing the MSB. The integer parts are numbered from 7 (the LSB) to 14 (the MSB) or 23 to 30. As an example, B16 has a maximum value of 256-1/128, a minimum value of –256+1/128, and a smallest non-zero value of 0.0078125 (= 1/128 = 2^-7). The numbers are expressed in sign magnitude. Table 6-3 illustrates the Signed Binary Decimal Data Formats.	6.5 <u>Signed Binary Decimal (B16-B32 and H32) Definitions.</u> Signed Binary Decimals B16 and B32 are signed binary decimals, with the first bit providing the sign, the next set of 8 bits providing the integer part, and the remaining bits providing the fractional part. Data field lengths are 16 or 32 bits, numbered from 0 to 14 or 0 to 30, plus the sign bit. For the B16 and B32 forms, the fraction parts are numbered from 0 representing the LSB to 6 or 22, representing the MSB. The integer parts are numbered from 7 (the LSB) to 14 (the MSB), or from 23 to 30. As an example, B16 has a maximum value of 256-1/128, a minimum value of –256+1/128, and a smallest non-zero value of 0.0078125 (= 1/128 = 2^-7). The numbers are expressed in sign magnitude. The H32 form is a special case of a Signed Binary Decimal which provides a higher range and less decimal precision, where the first bit (MSB) represents the sign, the following 15 bits (16 to 30) provide the integer, and the remaining 16 bits (0 to 15) provide the decimal. Table 6-3 illustrates the Signed Binary Decimal Data Formats.
	Page B-22, Table 6-3, Signed Binary Decimal Data Formats	Entries in Table 6-3, as shown in the "<u>Change FROM</u>" block below.	Entries in Table 6-3, as shown in the "<u>Change TO</u>" block below.

Item No.	Document Location	Current Text	New Text
	Change FROM:		



Change TO:



Annex A to

Errata Sheet No. 3 for STANAG 4607

Combined High-Range Resolution (HRR) and Range-Doppler Map (RDM) Segment

2.3 HRR Segment.

The HRR Segment (Table 2-5) provides data on High-Range Resolution (HRR) targets or High Range Resolution Range Doppler Maps (RDM) for a specified area. Data may also be formatted Range-Pulse format if desired. It is referenced to the MTI Report Index field (Conditional) of the corresponding Target Report in the Dwell Segment and shall be sent each time an HRR dwell is processed. Range Doppler Maps (RDMs) that have no corresponding target detections may be packaged into this segment. Consequently, the MTI Report Index is Conditional and omitted in such a case.

Table 2-5. HRR Segment

Field	Type	Field Name	Bytes	Form	Value Range	Units
H1	M	Existence Mask	5	FL40	Per Para. 2.5.1	
H2	M	Revisit Index.	2	I16	0 to 65535	
H3	M	Dwell Index.	2	I16	0 to 65535	
H4	M	Last Dwell of Revisit	1	FL8	0,1	Flag Bit
H5	C	MTI Report Index	2	I16	0 to 65535	
H6	C	Number of Target Scatterers	2	I16	0 to 65535	
H7	C	Number Of Range Samples/Total Scatterers	2	I16	0 to 65535	
H8	M	Number of Doppler Samples	2	I16	0 to 65535	
H9	C	Mean Clutter Power relative to peak scatterer	1	I8	0 to 255	-dB/4
H10	M	Detection Threshold Relative To peak scatterer	1	I8	0 to 255	-dB/4
H11	M	Range Resolution	2	B16	0.001 to 256 0 = No Statement	centimeters
H12	M	Range Bin Spacing	2	B16	0.001 to 256 0 = No Statement	centimeters
H13	M	Doppler Resolution	4	H32*	+/-0.000001 to 32767	Hertz
H14	M	Doppler Bin Spacing / PRF	4	H32*	+/-0.000001 to 32767	Hertz
H15	C	Center Frequency	4	B32	2.384e-7 to 256	Giga hertz

H16	M	Compression Flag	1	E8	0 = No Compression, 1 = Threshold Decomposition (x10), 2-255 = Reserved	
H17	M	Range Weighting Function Type	1	E8	0 = No Statement, 1 = Taylor Weighting, 2 = Other 3-255 = Reserved	
H18	M	Doppler Weighting Function Type	1	E8	0 = No Statement, 1 = Taylor Weighting, 2 = Other 3-255 = Reserved	
H19	M	Maximum Pixel Power	2	B16	-255.999 to 255.999 0 = No Statement	dB
H20	O	Maximum RCS	1	S8	-128 to 127	dB/2
H21	C	Range of Origin	2	S16	-32768 to 32767	meters
H22	C	Doppler of Origin	4	H32*	+/- 0.000001 to 32767	Hertz
H23	M	Type of HRR/RDM	1	E8	0 = Other 1 = 1-D HRR Chip 2 = 2-D HRR Chip 3 = Sparse HRR Chip 4 = Oversized HRR Chip 5 = Full RDM 6 = Partial RDM 7 = Full Range-Pulse Data 8-255 = Reserved	
H24	M	Processing Mask	1	FL8	Per Para. 2.5.24	
H25	M	Number Bytes Magnitude	1	I8	1 or 2	
H26	M	Number Bytes Phase	1	I8	0 or 1 or 2	
H27	O	Range Extent In Pixels	1	I8	0 to 255	pixels
H28	O	Range To Nearest Edge In Chip	4	I32	0 to 4294967295	centimeters
H29	O	Index Of Zero Velocity Bin	1	I8	0 to 255	
H30	O	Target Radial Electrical Length	4	B32	0 to 100 (0 = HRR not performed)	meters
H31	O	Electrical Length Uncertainty	4	B32	0 to 100	meters
H32		<HRR Scatterer Records>			Per Para. 2.5.32	

* **Signed Hertz Decimal (H32) Definition**

Signed Hertz Decimals H32 are signed binary decimals following the existing B32 data convention but with a higher range and less decimal precision, with the first bit indicating sign, followed by a 15-bit integer and the remaining 16 bits providing the fractional part. The fraction parts are numbered from 0 representing the LSB to 15, representing the MSB.

2.3.1 <u>Existence Mask (H1) (M).</u>

The Existence Mask, the first field of the HRR/RDM Segment, is an encoded five-byte field that immediately follows the Segment Header fields and precedes all other HR/RDM Segment fields. Each field of the HRR/RDM Segment, with the exception of the Existence Mask itself, is represented by a reserved bit within the Existence Mask. Each bit of the Existence Mask indicates whether or not the corresponding field of the HRR/RDM Segment is present in the data stream. The most-significant bit (bit 7) of the high-order byte (byte 4) corresponds to the first field (H2) following the Existence Mask of the HRR/RDM Segment, where the high-order byte shall be transmitted first. Figure 2-5 illustrates the mapping of each HRR/RDM Segment field to the corresponding bit position in the 5-byte Existence Mask. A binary level of "1" for a given bit indicates that the corresponding field of the HRR/RDM Segment is present in the data stream and a binary level of "0" indicates that it is not present. Unused bits shall be filled with zeroes.

Refer to Paragraph 2.4.1 in Part 2 of Annex A to STANAG 4607 for further details of the Existence Mask and its use.

Byte No.	Bit No.	Field No.	Type	Value
4	7	H2	M	1
4	6	H3	M	1
4	5	H4	M	1
4	4	H5	C	0,1
4	3	H6	C	0,1
4	2	H7	C	0,1
4	1	H8	M	1
4	0	H9	C	0,1
3	7	H10	M	1
3	6	H11	M	1
3	5	H12	M	1
3	4	H13	M	1
3	3	H14	M	1
3	2	H15	C	0,1
3	1	H16	M	1
3	0	H17	M	1
2	7	H18	M	1
2	6	H19	M	1
2	5	H20	O	0,1
2	4	H21	C	0,1
2	3	H22	C	0,1
2	2	H23	M	1
2	1	H24	M	1
2	0	H25	M	1
1	7	H26	M	1
1	6	H27	O	0,1
1	5	H28	O	0,1
1	4	H29	O	0,1
1	3	H30	O	0,1
1	2	H31	O	0,1
1	1	H32.1	M	1
1	0	H32.2	O	0,1
0	7	H32.3	C	0,1
0	6	H32.4	C	0,1
0	5	Spare	N/A	0
0	4	Spare	N/A	0
0	3	Spare	N/A	0
0	2	Spare	N/A	0
0	1	Spare	N/A	0
0	0	Spare	N/A	0

Figure 2-5.1. HRR/RDM Segment Existence Mask Mapping

2.3.2 Revisit Index (H2) (M)

The sequential count of a revisit of the bounding area for a given job ID.

2.3.3 Dwell Index (H3) (M).

The sequential count of a dwell within the revisit of a particular bounding area for a given job ID. A dwell index of “0” indicates the first dwell of the revisit. (NOTE: Revisit counts are allowed to “wrap” when the allowable range of revisits is exceeded.)

2.3.4 Last Dwell Of Revisit (H4) (M).

A flag to indicate, when set to “1”, that this is the last dwell of the revisit. A Dwell Index (field H3) of “0” with the Last Dwell of Revisit flag set to “1” indicates there are no other dwells within that revisit.

2.3.5 MTI Report Index (H5) (C).

The sequential index of the associated MTI Report, field D32.1 of the Dwell Segment, defined in Paragraph 2.4.32.1 of Annex A to STANAG 4607. This field must be used in conjunction with data types 1 thru 4 defined in Para. 2.5.23.

2.3.6 Number of Target Scatterers (H6) (C).

Number of Range Doppler pixels that exceed target scatterer threshold and are reported in this segment. Either H6 or H7 or both must be reported.

2.3.7 Number Of Range Samples/Total Scatterers (H7) (C).

Number of Range Bins/Samples in a Range Doppler Chip. When used with a Sparse HRR chip this field shall define the total number of scatterer records. Either H6 or H7 or both must be reported.

2.3.8 Number Of Doppler Samples/Pulses (H8) (M).

Number of Doppler bins in a Range-Doppler chip.

2.3.9 Mean Clutter Power Relative To Peak Scatterer (H9) (M).

Mean power of non-target pixels (residual clutter power). Computed after range Doppler chip formation, and expressed as an uncalibrated power in negative quarter-decibels (-dB/4). The value is calculated by: (a) converting the Mean Clutter Power Relative to Peak Scatterer to decibels (dB), a negative quantity with the maximum absolute value constrained to 63.75 dB; (b) multiplying that value by 4; (c) removing the negative sign; and (d) rounding to the nearest integer.

e.g., a value of 0 db = 0 or (0x00)
e.g., a value of 28.7 dB = 115 or (0x73)
e.g., a value of 63.75 dB = 255 or (0xFF)

2.3.10 Detection Threshold Relative To Peak Scatterer (H10) (M).

Detection threshold used to isolate significant target scatterer pixels, expressed as power relative to clutter mean in negative quarter-decibels (-dB/4). The value is calculated by: (a) converting the Detection Threshold Relative to Peak Scatterer to decibels (dB), a negative quantity with the maximum absolute value constrained to 63.75 dB; (b) multiplying that value by 4; (c) removing the negative sign; and (d) rounding to the nearest integer.

e.g., a value of 0 db = 0 or (0x00)
e.g., a value of 28.7 dB = 115 or (0x73)
e.g., a value of 63.75 dB = 255 or (0xFF)

2.3.11 Range Resolution (H11) (M).

3dB range impulse response of the radar, expressed in centimeters.

2.3.12 Range Bin Spacing (H12) (M).

Slant Range pixel spacing after over sampling, expressed in centimeters.

2.3.13 Doppler Resolution (H13) (M)

3dB Doppler resolution of the radar, expressed in Hertz.

2.3.14 Doppler Bin Spacing / PRF (H14) (M).

Doppler pixel spacing after over sampling, expressed in Hertz.

2.3.15 Center Frequency (H15) (C).

Center Frequency of the radar in GHz. This field must be used in conjunction with all HRR/RDM data types except types 1 and 3, as defined in Para. 2.5.23. This field is optional for data types 1 and 3.

2.3.16 Compression Flag (H16) (M).

An enumeration table denoting the compression technique used.

2.3.17 Range Weighting Function Type (H17) (M).

An enumeration table indicating the spectral weighting used in the range compression process.

2.3.18 Doppler Weighting Function Type (H18) (M).

An enumeration table indicating the spectral weighting used in the cross-range or Doppler compression process.

2.3.19 Maximum Pixel Power (H19) (M).

Initial power of the peak scatterer, expressed in dB. The value is calculated by: (a) converting the Maximum Pixel Power to decibels (dB), with the maximum value constrained to 255.999, a minimum value of –255.999, and a smallest non-zero value of 0.001.

2.3.20 Maximum RCS (H20) (O).

RCS of the peak scatterer, expressed in half-decibels (dB/2). The value is calculated by: (a) converting the Maximum RCS to decibels (dB), with the maximum absolute value constrained to 63.75 dB; (b) multiplying that value by 2; and (c) rounding to the nearest integer.

2.3.21 Range of Origin (H21) (C).

When the RDM does not correlate to a single MTI report index or when the center range bin does not correlate to the center of the dwell; provide the range sample offset in meters from Dwell Center (positive is away from the sensor) of the first scatterer record. This field must be used in conjunction with HRR/RDM data type 4 and 6, as defined in Para. 2.5.23. This field is optional for all other HRR/RDM data types.

2.3.22 Doppler of Origin (H22) (C).

When the RDM does not correlate to a single MTI report index or the center doppler bin does not correlate to the doppler centroid of the dwell; Doppler sample value in Hz of the first scatterer record. This field must be used in conjunction with HRR/RDM data type 4 and 6, as defined in Para. 2.5.23. This field is optional for all other HRR/RDM data types.

2.3.23 Type of HRR/RDM (H23) (M).

An enumeration field which designates the type of data being delivered. Acceptable values for enumeration are as follows:

0 = Other
1 = 1-D HRR Profile - An HRR chip having samples in a single doppler bin, multiple range samples and corresponding to a single detected entity.
2 = 2-D HRR Chip - An HRR chip with samples in both dimensions and corresponding to a single detected entity
3 = Sparse HRR Chip - An HRR chip with scatterer records sparsely (non-contiguous range and doppler) representing the range-doppler space of a single detected entity

4 = Oversized HRR Chip - A 2-D HRR chip with excess range/doppler beyond the extent of the detected entity to which the chip corresponds (this is basically a partial RDM that is correlated to an entity by the MTI Report Index)
5 = Full RDM - A Range Doppler Map with Contiguous Samples in range and doppler corresponding to the full detection space of the radar system.
6 = Partial RDM - A Range Doppler Map with Contiguous Samples in range and doppler corresponding to a small portion of the detection space of the radar system.
7 = Full Range Pulse Data - A data block of data in pulse-range space following range processing without any doppler processing performed.
8-255 = Reserved

2.3.24 <u>Processing Mask (H24) (O)</u>

A flag field to indicate the additional signal processing techniques applied to the data. As no motion data is provided on a pulse basis, it is generally assumed that range processing and motion compensation has been applied when necessary. A bit set to a binary “one” indicates that the process has been applied. Bit assignments are shown in Figure 2-5.1.

Byte No.	**Bit No.**	**Processing Technique**
0	7	Clutter Cancellation
0	6	Single-Ambiguity Keystoning
0	5	Multi-Ambiguity Keystoning
0	4	Spare
0	3	Spare
0	2	Spare
0	1	Spare
0	0	Spare

Figure 2-5.1. Processing Mask Bit Assignments

2.3.25 <u>Number of Bytes – Magnitude (H25) (M)</u>

This field shall be used to indicate the number of bytes to be used for the magnitude data in the scatterer record. Only values of 1 or 2 are allowed.

2.3.26 <u>Number of Bytes – Phase (H26) (M)</u>

This field shall be used to indicate the number of bytes to be used for the magnitude data in the scatterer record. Only values of 0, 1 or 2 are allowed. A value of 0 indicates no phase data is present.

2.3.27 <u>Range Extent in Pixels (H27) (O)</u>

Number of pixels in the range dimension of the chip.

2.3.28 Range To Nearest Edge In Chip (H28) (O)

Distance from Range Bin to closest edge in the entire chip, expressed in centimeters.

2.3.29 Index Of Zero Velocity Bin (H29) (O)

Relative velocity to skin line. This field shall be masked out if field H23 is set to a value of "1" for a 1-D "range profile".

2.3.30 Target Radial Electrical Length (H30) (O)

Computed object length based upon HRR profile. This field shall be set to a value of "0" if HRR is not performed.

2.3.31 Electrical Length Uncertainty (H31) (O)

The standard deviation of estimate of the object length, expressed in meters.

2.3.32 <HRR Scatterer Records>.

Table 2-5.1 describes the format for HRR/Range-Doppler Scatterer Records. A Scatterer Set is an array of Scatterer Records for each target pixel that exceeds the target detection threshold. Alternatively, a complete range-doppler map, regardless of threshold, may be sent without respective range/doppler indices for each scatterer. A set of HRR/Range-Doppler Scatterer Records shall be transmitted for the associated MTI target (HRR only) and shall be sent for each dwell processed. Scatterer records within the record shall be ordered in range order (For Example: All Doppler samples at range 1 then all Doppler samples at range 2….) starting at near range. Doppler samples shall be arranged sequentially from negative to positive doppler. Hence the origin is the scatterer at the nearest range and least Doppler value. In the case of Range-Pulse data the origin would be the first pulse. The Phase of each scatterer is optional.

Table 2-5.1 HRR Scatterer Record

Field	Type	Field Name	Bytes	Form	Value Range	Units
H32.1	M	Scatterer Magnitude	1 or 2 (Per para. 2.5.25)	I16 or I8 (Per para. 2.5.25)	0 to 65535 or 0 to 255	-dB/4
H32.2	O	Scatterer Phase	1 or 2 (Per para. 2.5.26)	1 or 2 (Per para. 2.5.26)	0 to 65535 or 0 to 255	Quantized rotation
H32.3	C	Range Index	1	I16	0 to 65535	Bins
H32.4	C	Doppler Index	1	I16	0 to 65535	Bins

2.3.32.1 Scatterer Magnitude (H32.1) (M).

Scatterer's power magnitude, quantized to 1 or 2 bytes per Para. 2.5.25, normalized to peak scatterer, and expressed in quarter-decibels (dB/4). The value is calculated by: (a) converting the Scatterer Magnitude to decibels (dB), with the maximum value constrained to 63.75 dB (H25=1) or 16383.75 dB (H25=1); (b) multiplying that value by 4; and (c) rounding to the nearest integer.

2.3.32.2 Scatterer Phase (H32.2) (O).

Scatterer's complex phase in degrees, quantized to 1 or 2 bytes per Para. 2.5.26, and expressed as a quantized rotation in units of 2*pi/256 (H26=1) or 2*pi/65536 (H26=2).

2.3.32.3 Range Index (H32.3) (C).

Scatterer's Range index relative to Range-Doppler chip, where increasing index equates to increasing range. Must be used when the Range-Doppler matrix is sparsely populated.

2.3.32.4 Doppler Index (H32.4) (C).

Scatterer's Doppler index relative to Range-Doppler chip, where increasing index equates to increasing Doppler. Must be used when the Range-Doppler matrix is sparsely populated.

M.2 Approved Changes to AEDP-4607 Edition A Version 1

The following changes were approved by the Custodian and reflect changes to the standard from AEDP-4607 Edition 3 to AEDP-4607 Edition A V1.

Item No.	***Document Location***	***Current Text***	***New Text***
1	*Entire Document*	"STANAG 4607"	"AEDP-4607" **(*Note: Template Change*)**
2	*Entire Document*	"AEDP-7"	"AEDP-4607.1" **(*Note: Template Change*)**
3	*Page v, Table of Contents*	PART 1 - Data Format Descriptions	CHAPTER 1 INTRODUCTION **(*Note: Template Change*)**
4	*Page v, Table of Contents*	N/A	CHAPTER 2 Data Format Descriptions
5	*Page v, Table of Contents*	PART 2 - Header and Segment Descriptions	CHAPTER 3 HEADER AND SEGMENT DESCRIPTIONS **(*Note: Template Change*)**
6	*Page v, Table of Contents*	PART 3 – Job Request and Acknowledgement Descriptions	CHAPTER 4 JOB REQUEST AND ACKNLOWLEDGE DESCRIPTIONS **(*Note: Template Change*)**
7	*Page ix, Table of Contents*	N/A	ANNEX A. ALPHANUMERIC CHARATER SET ANNEX B. TERMS AND DEFINITIONS ANNEX C. RADAR SYSTEM TERMS AND DEFINITIONS **(*Note: Template Change*)**
8	*Pages xi – xii, List of Illustrations, List of Tables, References*	N/A	LIST OF ILLUSTRATIONS LIST OF TABLES REFERENCES **(*Note: Template Change*)**
9	*Page xiv, Conventions*	N/A	CONVENTIONS TERMINOLOGY MEASUREMENTS WORDING CONVENTIONS **(*Note: Template Change *)**
10	*Page 1, Section 1.3 Organization, Para. 1*	This document shall be used in conjunction with the separately published Allied Engineering Documentation Publication No. 7 (AEDP-7), the STANAG 4607 NATO Ground Moving Target Indicator Format (GMTIF) Implementation Guide. AEDP-7 provides implementation guidance, test and validation procedures, a configuration management plan, and amplifying information for STANAG 4607.	The standard in this document (AEDP-4607) shall be used in conjunction with the NATO Ground Moving Target Indicator Format (GMTIF) Implementation Guide which will be published separately as a Standards Related Document (AEDP-4607.1). The Implementation Guide provides implementation guidance, test and validation procedures, a configuration management plan, and amplifying information for this standard.

Item No.	***Document Location***	***Current Text***	***New Text***
11	*Page 1, Section 1.3 Organization, Para. 1*	N/A	Early versions of this standard were published directly within the STANAG 4607 document. Today the STANAG document simply describes the agreement to use the standard now captured in AEDP-4607 (this document). The accompanying AEDP-4607.1 document provides additional guidance for implementing the standard, replacing earlier versions captured in AEDP-7.
12	*Page 3, Section 2.1 Packet Organization, Para. 2*	A Segment Header, which defines the type of message and the length (in bytes) of the following segment, precedes each Message Segment. Message Segments defined in this document include Mission, Dwell, HRR, Job Definition, Free Text, Test/Status, Processing History, and Platform Location. Dwell Segments may include Target Reports and the HRR Segment may include Scatterer Reports, as applicable.	A *Segment Header*, which defines the type of message and the length (in bytes) of the following segment, precedes each Message Segment. Message Segments defined in this document include Mission, Dwell, (High Range Resolution) HRR, Job Definition, Free Text, Test/Status, Processing History, and Platform Location. Dwell Segments may include Target Reports and the HRR Segment may include Scatterer Reports, as applicable, where a Scatterer is an object that reflects energy (power) to the sensor recording the reflected energy.
13	*Entire Document*	“FIPS Pub 10-4”	Annex D

Item No.	***Document Location***	***Current Text***	***New Text***
14	*Pages 7-8, Section 3.1.1 Version ID (P1) (M).*	A two-character alphanumeric code indicating the version of STANAG 4607 to which the packet conforms. It shall be of the form “mn”, where “m” indicates the edition number and “n” indicates the amendment number of that edition. For example, a value of “10” indicates that it is edition 1 without any amendments. A value of “11” indicates that it is the edition 1 with amendment number 1 incorporated.	A two-character alphanumeric code indicating the version of the standard to which the packet conforms. It shall be of the form “mn”, where “m” reflects the edition of the standard and “n” reflects the version of that edition of the standard. The edition of the standard (“m”) should be captured as a number where edition “A” equates to the number 4, “B” to the number 5 and so on. The version (“n”) should be a number and directly correspond to the standard’s version number. For example, a value of “41” indicates the use of AEDP-4607 Edition A version 1. A value of “53” indicates AEDP-4607 Edition B version number 3. For information: The detail of earlier versions of this standard were directly captured in the Standardisation Agreement (STANAG) itself, and in those cases the edition and amendment number (starting from 0) were the numbers used in this field. The document numbering changed following the transition of the detail of the standard from the STANAG 4607 Edition 3 (“30”) document to the AEDP-4607 Edition A version 1 (“41”) document.
15	*Page 8, Section 3.1.4 Heading*	Packet Security – Classification (P4) (M)	Packet Security – Classification and/or Marking (P4) (M)

Item No.	***Document Location***	***Current Text***	***New Text***
16	*Page 8, Section 3.1.4 Packet Security – Classification and/or Marking (P4) (M), Para 1*	A digraph indicating the national or multinational security system to which the security classification in field P4 conforms. Country codes for national security systems are in accordance with FIPS Publication 10-4. Example values are shown in Table 2-1.2. If this field is all BCS spaces (hexadecimal 0x20), it indicates that no Security Classification System applies to the file.	A digraph indicating the national or multinational security system to which the security classification and/or marking in field P4 conforms. For backwards compatibility, this standard currently continues to use two-character alphanumeric codes. Follow national procedures in accordance with ORBAT and/ or SOP as agreed by coalition and/ or NATO forces for field values. Example values are shown in Table 3-3. If this field is all BCS spaces (hexadecimal 0x20), it indicates that no Security Classification System applies to the file.
17	*Page 8, Table 3-3: Packet Classification System*	***DIGRAPH*** BE, BU, CA, EZ, DA, EN, FR, GM, GR, HU, IC, IT, LG, LH, LU, NL, NO, PL, PO, RO, LO, SI, SP, TU, UK, US	***DIGRAPH*** AL, BE, BU, CA, CR, CZ, DE, ES, FR, GE, GR, HU, IC, IT, LA, LI, LU, MO, NE, NM, NO, PL, PO, RO, SK, SN, SP, TÜ, UK, US
18	*Page 9, Section 3.1.6 Packet Security – Code (P6) (M), Para 1, Sent 4*	NOTE: This table is representative, based on US security handling codes, and is not an exhaustive list of all allowable codes.	NOTE: This table is representative, based on NATO security handling codes for Packet Classification System XN, and is not an exhaustive list of all allowable codes.

Item No.	*Document Location*	*Current Text*	*New Text*
19	*Page 9, Table 3-4: Packet Security Codes*	“0x0001” | “NOCONTRACT” “0x0002” | “ORCON” “0x0004” | “PROPIN” “0x0008” | “WNINTEL” “0x0010” | “NATIONAL ONLY” “0x0020” | “LIMDIS” “0x0040” | “FOUO” “0x0080” | “EFTO” “0x0100” | “LIM OFF USE (UNCLAS)” “0x0200” | “NONCOMPARTMENT” “0x0400” | “SPECIAL CONTROL” “0x0800” | “SPECIAL INTEL” “0x1000” | “WARNING NOTICE – SECURITY CLASSIFICATION IS BASED ON THE FACT OF EXISTENCE AND AVAIL OF THIS DATA” “0x2000” | “REL NATO (BEL, BGR, CAN, CZE, DNK, EST, FRA, DEU, GRC, HUN, ISL, ITA, LVA, LTU, LUX, NLD, NOR, POL, PRT, ROU, SVK, SVN, ESP, TUR, GBR, USA)” “0x4000” | “REL 4-EYES (AUS, CAN, GBR, USA) “0x8000” | “REL 9-EYES (CAN, FRA, DEU, ITA, NLD, NOR, ESP, GBR, USA)	“0x0001” | “EU (Releasable To European Commission” “0x0002” | “EUFOR (Releasable To European Union Force)” “0x0004” | “ISAF (Releasable To International Security Assistance Force” “0x0008” | “KFOR (Releasable To Kosovo Force)” “0x0010” | “NATO RESPONSE FORCE (Releasable To NRF)” “0x0020” | “NMI (Releasable To NATO Mission Iraq” “0x0040” | “PFP (Releasable To Partnership for Peace)” “0x0080” | “RESOLUTE SUPPORT (Releasable To RS)” “0x0100” | “THE PUBLIC (Releasable To The Public)” “0x0200” | “UNDEFINED. FOR FUTURE USE)” “0x0400” | “UNDEFINED. FOR FUTURE USE)” “0x0800” | “UNDEFINED. FOR FUTURE USE)” “01000” | “UNDEFINED. FOR FUTURE USE)” “0x2000” | “UNDEFINED. FOR FUTURE USE)” “0x4000” | “UNDEFINED. FOR FUTURE USE)” “0x8000” | “UNDEFINED. FOR FUTURE USE)”
20	*Page 10, Section 3.1.10 Job ID (P10) (M), Para 1*	A platform-assigned number identifying the specific request or task to which the packet pertains. The Job ID shall be unique within a mission. A Job ID of 0 (hex 0x00) indicates there is no reference to any specific request or task. If the Job ID in the Packet Header is 0 (hex 0x00), then the packet can not contain Dwell, HRR, or Range-Doppler segments.	A platform-assigned number identifying the specific request or task that pertains to all Dwell, HRR, and Range-Doppler segments in the packet. The Job ID shall be unique within a mission. If the Packet contains no Dwell, HRR, or Range-Doppler segments, then the Job ID in the Packet Header shall be 0 (hex 0x00). If the Packet contains Dwell, HRR, or Range-Doppler segments, then the Job ID in the Packet Header shall be the non-zero Job ID corresponding to those segments.

Item No.	Document Location	Current Text	New Text
21	*Page 10, Section 3.2 Segment Header, Para 1*	The Segment Header (Table 2-2) shall be sent at the beginning of each segment transmitted within a packet. It identifies the type and size of the segment that follows.	The Segment Header (Table 3-6) shall be sent at the beginning of each segment transmitted within a packet. It identifies the type of segment that follows and the total size of the Segment Header (5 bytes) plus the size of the associated segment.
22	*Page 11, Section 3.3.1 Mission Plan (M1) (M), Para 1, Sent 3*	For space-based platforms, the mission identifier or a suitable designator such as “yymmhhnn”, where yy (year), mm (month), and hh (hour) indicate the time the collection mission began and nn is the identifying number of the satellite, shall be used.	For space-based platforms, the mission identifier or a suitable designator such as “yymmddhhnn”, where yy (year), mm (month), dd (day), and hh (hour) indicate the time the collection mission began and nn is the identifying number of the satellite, shall be used.
23	*Pages 12-13, Table 3-8 Platform Types*	Platform | Value Global Hawk-Navy | 5 HORIZON | 6 E-10 (was MC2a) | 12 Global Hawk-Germany | 22 Paul Revere | 23 BAC-111 | 25 King Air | 27 LIMIT | 28 NRL NP-3B | 29 Alliance Ground Surveillance (AGS) (A321) | 32 Reaper | 36 Twin Otter | 39 Available for Future Use | 57-254	Platform | Value | **Program Status** Global Hawk-Navy (**BAMS**) | 5 | HORIZON | 6 | **Program De-fielded** E-10 (was MC2A) | 12 | **Program Cancelled** Global Hawk-Germany | 22 | **Program Cancelled** Paul Revere | 23 | **R&D Platform** BAC-111 | 25 | **R&D Platform** King Air | 27 | **R&D Platform** LIMIT | 28 | **R&D Platform** NRL NP-3B | 29 | **R&D Platform** Alliance Ground Surveillance (AGS) (A321) | 32 | **Program Cancelled** **MQ-9** Reaper | 36 | Twin Otter | 39 | **R&D Platform** **LEMV | 40 |** **P8A Poseidon | 41 |** **A160 | 42 |** **MQ-1C Gray Eagle | 43 |** **RQ-7C Shadow | 44 |** **PGSS | 45 |** **PTDS | 46 |** **LRAS 3 | 47 |** **RAID Tower | 48 |** **Heron | 49 |** **Scan Eagle | 50 |** **Fire Scout | 51 |** **F35 Joint Strike Fighter | 52 |** **F-61 Sea King (SKASac) | 53 |** **Lynx Wildcat | 54 |** **Merlin | 55 |** **SDT (Système de Drone Tactique)** Available for Future Use | **57-254** |
24	*Page 14, Table 3-9: Dwell Segment*	Field Value Range D16 0 to 255.9928	Field Value Range D16 0 to 255.9921875

Item No.	***Document Location***	***Current Text***	***New Text***
25	*Page 15, Section 3.4.1 Existence Mask (D1) (M), Para 1, Sent 6*	A binary level of “1” for a given bit indicates that the corresponding field of the Dwell Segment is present in the data stream and a binary level of “0” indicates that it is not present. Unused bits shall be filled with zeroes.	A binary level of “1” for a given bit indicates that the corresponding field of the Dwell Segment is present in the data stream. As an exception to the normal rules for existence masks, if field D5=0 (i.e. no targets present) then it shall be assumed that the target report fields (D32.1-D32.18) are not present even if the existence mask indicates they are. This allows producers to implement constant values in the existence mask for these fields regardless of whether targets are reported in each dwell segment. In all cases, a binary level of “0” indicates that it is not present. Unused bits shall be filled with zeroes.
26	*Page 16, Section 3.4.3 Dwell Index (D3) (M), Para 1, Sent 3*	(NOTE: Revisit counts are allowed to “wrap” when the allowable range of revisits is exceeded.)	(NOTE: Dwell counts are allowed to “wrap” when the allowable range of dwells is exceeded.)
27	*Page 23, Section 3.4.32.8 Target Wrap Velocity (D32.8) (0), Para 1, Sent 2*	For most radars this is calculable as the effective PRF (i.e., the product of PRF's on CPI's for which the target was detected) multiplied by the effective sensor wavelength divided by four.	For most radars this is calculable as the effective Pulse Repetition Frequency (PRF) (i.e., the product of PRF's on Coherent Processing Intervals (CPI's) for which the target was detected) multiplied by the effective sensor wavelength divided by four.
28	*Page 24, Table 3-11: Target Classification*	<u>Value</u> | <u>Target Classification</u> 14-125 | Reserved 143 | Tagging Device 143-253 | Reserved	<u>Value</u> | <u>Target Classification</u> 14 | Clutter, Live Target 15 | Phantom Live 16 | Ground Rotator Live 17 | Small Vehicle, Live Target 18 | Low-slow Flyer, Live Target 19-125 | Reserved 142 | Tagging Device 143 | Reserved 144 | Clutter, Simulated Target 145 | Phantom Simulated 146 | Ground Rotator Simulated 147 | Small Vehicle, Simulated Target 148 | Low-slow Flyer, Simulated Target 149-253 | Reserved

Item No.	Document Location	Current Text	New Text
29	*Page 26, Section 3.4.32.18 Radar Cross Section (D32.18) (O), Para 1*	Estimated radar cross section (RCS) of the target return, expressed in half decibels (dB/2).	Estimated radar cross section (RCS) of the target return in square meters, expressed in half decibels (dB/2).
30	*Pages 26, Table 3-12: HRR Segment*	Field Name / Units Mean Clutter Power Relative to Peak Scatterer: -dB/4 Compression Flag	Field Name / Units Mean Clutter Power Relative to Peak Scatterer: dB/4 Compression Type
31	*Pages 26-27, Table 3-12: HRR Segment*	Field Name / Value Range Range Resolution | 0.001 to 256 0 = No Statement Range Bin Spacing | 0.001 to 256 0 = No Statement Center Frequency | 2.384e-7 to 256 Maximum Pixel Power | -255.999 to 255.999 0 = No Statement	Field Name / Value Range Range Resolution | 0.001 to 255.9921875 0 = No Statement Range Bin Spacing | 0.001 to 255.9921875 0 = No Statement Center Frequency | 2.384e-7 to 255.9921875 Maximum Pixel Power | -255.9921875 to 255.9921875 0 = No Statement
32	*Page 29, Section 3.5.3 Dwell Index (H3) (M), Para 1, Sent 3*	(NOTE: Revisit counts are allowed to “wrap” when the allowable range of revisits is exceeded.)	(NOTE: Dwell counts are allowed to “wrap” when the allowable range of dwells is exceeded.)
33	*Page 30, Section 3.5.9 Mean Clutter Power Relative to Peak Scatterer (H9) (C)*	Mean power of non-target pixels (residual clutter power). Computed after range Doppler chip formation, and expressed as an uncalibrated power in negative quarter-decibels (-dB/4). The value is calculated by: (a) converting the Mean Clutter Power Relative to Peak Scatterer to decibels (dB), a negative quantity with the maximum absolute value constrained to 63.75 dB; (b) multiplying that value by 4; (c) removing the negative sign; and (d) rounding to the nearest integer.	The Peak Scatter returns the maximum power level (e.g. in milliwatts, or dBm) registered by the sensor. Mean power of non-target pixels (residual clutter power) is computed after range Doppler chip formation, and expressed as an uncalibrated power in quarter-decibels (dB/4). The value is calculated by: (a) converting the Mean Clutter Power Relative to Peak Scatterer to decibels (dB), with the maximum value constrained to 63.75 dB; (b) multiplying that value by 4; and (c) rounding to the nearest integer. This field must be used in conjunction with data type (per H23) 3.

Item No.	*Document Location*	*Current Text*	*New Text*
34	*Page 31, Section 3.5.20 Maximum RCS (H20) (C), Para 1, Sent 1*	RCS of the peak scatterer, expressed in half-decibels (dB/2).	RCS of the peak scatterer in square meters, expressed in half-decibels (dB/2).
35	*Page 32, Section 3.5.24 Processing Mask (H24), Para 1*	A bit set to a binary “one” indicates that the process has been applied.	A bit set to a binary “one” indicates that processing technique.
36	*Page 32, Section 3.5.24 Processing Mask (H24) Figure 3-5: Processing Mask Bit Assignments*	***Processing Technique*** Clutter Cancellation Single-Ambiguity Keystoning Multi-Ambiguity Keystoning Spare Spare Spare Spare Spare	***Processing Technique*** Clutter Cancellation Single-Ambiguity Keystoning Multi-Ambiguity Keystoning Spare Spare Spare Spare Unknown
37	*Page 32, Section 3.5.26, Para 1*	A value of 0 indicates no phase data is present.	A value of 0 indicates no phase data is present and H32.2 is not populated.
38	*Page 33, Section 3.5.32.1 Scatterer Magnitude (H32.1) (M), Para 1*	The value is calculated by: (a) converting the Scatterer Magnitude to decibels (dB), with the maximum value constrained to 63.75 dB (H25=1) or 16383.75 dB (H25=1); (b) multiplying that value by 4; and (c) rounding to the nearest integer.	The value is calculated by: (a) converting the Scatterer Magnitude to decibels (dB), with the maximum value constrained to 63.75 dB (H25=1) or 16383.75 dB (H25=2); (b) multiplying that value by 4; and (c) rounding to the nearest integer.
39	*Page 33, Table 3-13: HRR Scatter Record*	Type | Form | Value Range M | I16 or I8 (Per para 2.5.25) | 0 to 65535 or 0 to 255 O | 1 or 2 (Per para. 2.5.26) | 0 to 65535 or 0 to 255	Type | Form | Value Range M | I8 or I16 (Per para 3.5.25) | 0 to 255 or 0 to 65535 C | I8 or I16 (Per ***para 3.5.26)*** | 0 to 255 or ***0 to 65535***
40	*Page 33, Section 3.5.32.2, Para 1, Sent 3*	N/A	This field is populated if H26=1 or H26=2.

Item No.	Document Location	Current Text	New Text
41	*Page 36, Table 3-15: Sensor Types*	Sensor Value HORIZON 6 APY-3 7 MP-RTIP 13 TCAR (AGS A321) 21 Available for Future Use 28-254	Sensor | Value | **Sensor Status** HORIZON | 6 | **Program Discontinued** **APY-7** | 7 | TESAR | 12 | **Program Discontinued** **AN/ZPY-2 (MP-RTIP)** | 13 | TCAR (AGS A321) | 21 | **Program Cancelled** **AAR-57 | 28 |** **DDR | 29 |** **SeaSpray | 30 |** **Merlin (CROWSNEST) | 31 |** **Searchwater 2000 | 32 |** **Osprey | 33 |** **PicoSAR | 34 |** **Available for Future Use | 35-254 |**
42	*Page 38, Section 3.7.14 Radar Mode (J14) (M), Para 1, Sent 1*	An enumeration table that identifies the mode in which the radar will operate for the given job ID. Radar operating modes are system-specific and shall be determined for each system.	A number found in Table **Error! No text of specified style in document.**-16 that identifies the mode in which the radar will operate for the given job ID. The Job ID must be associated with exactly one radar operating mode. Thus, when the system changes radar modes, a new Job ID must be assigned. Radar operating modes are system-specific and shall be determined for each system.
43	*Pages 38-40, Table 3-16: Radar Modes*	(Note: Table too large for cell)	Changes: • Added Radar modes • Updated Radar systems Added Mode Status Column
44	*Page 41, Section 3.7.26 Nominal Sensor Value – False Alarm Density, Para 1, Sent 1*	The expected density of False Alarms (FA), expressed in decibels (-10 $\log_{10} d$, where d is in False Alarms per square meter). 0 represents 1 FA/m^2, and 60 represents 10^{-6} FA/m^2 (i.e. 1 FA/km^2).	• The expected density of False Alarms (FA), expressed as the negative of the decibel value (-10 log10 d, where d is in FA per square meter). Zero decibels (0 dB) represents 1 FA/m2 and 60 dB represents 10-6 FA/m2 (i.e. 1 FA/km2). GMTI data with a False Alarm Density greater than one (FA/m2 > 1) is of no operational value and is range limited to 0 dB.

Item No.	Document Location	Current Text	New Text
45	*Page 44, Section 3.12.4 Dwell Time (T4) (M), Para 1, Sent 1*	The elapsed time, expressed in milliseconds, from the reference time specified in the Mission Segment to the beginning of the dwell specified in this segment.	The elapsed time, expressed in milliseconds, from midnight at the beginning of the day specified in the Reference Time fields of the Mission Segment to the temporal center of the dwell specified in this segment.
46	*Page 46, Table 3-22: Processing Records*	Value Range Units Alphabetic FIPS Pub 10-4 (Per Para. 2.14.2)	Value Range Units Alphanumeric Annex D (Per Para. 3.14.6.2)
47	*Page 55, Section 4.2.1 Job ID (A1) (M), Para 1*	A platform assigned number identifying the specific request or task to which the dwell pertains. The Job ID shall be unique within a mission.	A platform assigned number identifying the specific Job ID created in response to the request.
48	*Page 57, Section 4.2.24 Radar Job Start Time – Seconds (A24) (M), Para 1*	Specifies the second of the minute in which the radar job will start.	Specifies the second of the minute in which the radar job will start. Normally a value in the range 0 to 59 will be used for this field. The upper bound of 60 is used in the case of needing to reference a leap second according to UTC convention.
49	*Page B-1, Annex B Terms and Definitions*	APY-3 Joint STARS Sensor	APY-7 Joint STARS Sensor (Note: Addition to table) SDT Système de Drone Tactique
50	*Page C-8, Table C-1*	(Note: Table too large for cell)	(Note: Updates made to Job & Dwell, and Revisit Status columns)
51	*Entire Document*	"Least significant bit (LSB)"	"Least significant bit (lsb)"
52	*Entire Document*	"Most significant bit (MSB)"	"Most significant bit (msb)"
53	*Page C-16, Section C-4.4 Signed Integer (S8-S64) Definitions, Para 1*	Signed Integers S8-S64 are positive or negative numbers, depending on the value of the highest numbered bit (the "sign" bit), and use two's complement encoding. Data field lengths are 8, 16, 32, or 64 bits, numbered from 0 representing the LSB to 6, 14, 30, or 62 representing the MSB, plus the sign bit.	Signed Integers S8-S64 are positive or negative numbers, depending on the value of the msb (the "sign" bit), and use two's complement encoding. Data field lengths are 8, 16, 32, or 64 bits, numbered from 0 representing the lsb to 6, 14, 30, or 62 then the sign.

Item No.	Document Location	Current Text	New Text
54	*Page C-19, Section Binary Angle (BA16-BA32) Definitions, Para 1, Sent 1*	Positive angles designated as either BA16 or BA32 are encoded as unsigned integers of the corresponding number of bits, i.e., I16 or I32, and are converted to angles in accordance with the Binary Angle Measurement System: a 'one' in the most significant bit (msb) shall represent 180°, a 'one' in the next bit shall represent 90°, and so on; each subsequent bit having a conversion value of half of the conversion value of the previous bit.	Positive angles designated as either BA16 or BA32 are encoded as unsigned integers of the corresponding number of bits, i.e., I16 or I32, and are converted to angles in accordance with the Binary Angle Measurement System: a “1” in the most significant bit (msb) shall represent 180°, a “1” in the next bit shall represent 90°, and so on; each subsequent bit having a conversion value of half of the conversion value of the previous bit.
55	*Page C-20, Section C-4.7 Signed Binary Angle (SA16-SA32) Definitions, Para 1, Sent 2*	The integers are converted to angles in accordance with the following Signed Binary Angle Measurement System: the first bit is the sign bit (with 'one' indicating a negative number); a 'one' in the most significant bit (msb) shall represent 45° , a 'one' in the next bit shall represent 22.5°, and so on; each subsequent bit having a conversion value of half of the conversion value of the previous bit.	The integers are converted to angles in accordance with the following Signed Binary Angle Measurement System: the msb is the sign bit (with a “1” indicating a negative number); a “1” in the second bit shall represent 45°, a “1” in the third bit shall represent 22.5°, and so on; each subsequent bit having a conversion value of half of the conversion value of the previous bit. The lsb shall be determined by rounding.
56	*Page C-20, Section C-4.7 Signed Binary Angle (SA16-SA32) Definitions*	As an example, the angle of –34.873352° equals an SA16-encoded value of 1100111001100110.	As an example, the angle of –34.876099° equals an SA16-encoded value of 1100111001100110.
57	*C-21,22, Section C-5 Value Definitions*	N/A	(Note: New Section Added)
58	*Annex D. Geographic Entities*	N/A	(Note: New Annex Added)

ANNEX N Changes from Version to Version of AEDP-4607.1

N.1 Approved Changes to AEDP-7 Edition 2

This section summarizes the sections added to AEDP-7 Edition 2 which were not in AEDP-7 Edition 1. Table L-1 lists the sections in each edition.

Table N-1. AEDP-7 Edition 1 vs. AEDP-7 Edition 2 Table of Contents

Table of contents – AEDP-7 Edition 1	Table of contents – AEDP-7 Edition 2
1. Aim	1. Aim
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3. AEDP Scope	3. AEDP Scope
ANNEX A: Rationale and Employment Concept for GMTI Format	ANNEX A: Rationale and Employment Concept for GMTI Format
A.1 Introduction	A.1 Introduction
A.2 Rationale for GMTI Format	A.2 Rationale for GMTI Format
A.3 Notional Employment Concept	A.3 Notional Employment Concept
A.4 Conclusion	A.4 Conclusion
ANNEX B: Embedding the GMTI Format in the NATO Imagery Formats	ANNEX B: STANAG 4607, Edition 3 Format Specification
B.1 Introduction	Part 1 - General
B.2 Embedding the GMTI Format into STANAG 4545	B.1 Scope
B.3 Embedding the GMTI Format into STANAG 7023	B.2 Definitions
B.4 Disseminating GMTI Information Through STANAG 4559 Libraries	B.3 Data and Packet Structure
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	Appendix 1. Alphanumeric Character Set
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ANNEX C: Data Exploitation Classes	ANNEX C: Options for Dissemination of GMTI Information Using NATO ISR STANAGs
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C.2 Situation Awareness Exploitation Class	C.2 Embedding the GMTI Format into STANAG 4545
C.3 Targeting and Tracking Exploitation Class	C.3 Embedding the GMTI Format into STANAG 7023

C.4 Targeting and Tracking With HRR Exploitation Class	C.4 Disseminating GMTI Information Through STANAG 4559 Libraries
ANNEX D: Communications Issues	ANNEX D: Data Exploitation Classes
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D.2 Guidelines for Handling Dwell Segments and Target Reports	D.2 Definitions of Exploitation Classes
D.3 Transmission Layer Assumptions	D.3 Situation Awareness Exploitation Class
D.4 Guidelines for Addressing Imperfections in the Transmission Layer	D.4 Targeting and Tracking Exploitation Class
D.5 Sending Target Reports in Multiple Packets	D.5 Targeting and Tracking With HRR Exploitation Class
D.6 Generic Packet Splitting Algorithm	
ANNEX E: Coordinate Systems and Time Standards	ANNEX E: Communications Issues
E.1 Geodetic Coordinate System	E.1 General
E.2 Earth-Centered Earth-Fixed (ECEF) and Earth-Centered Inertial(ECI) Systems	E.2 Guidelines for Handling Dwell Segments and Target Reports
E.3 Topocentric Coordinate System (TCS)	E.3 Transmission Layer Assumptions
E.4 Sensor-Centered Coordinate System	E.4 Guidelines for Addressing Imperfections in the Transmission Layer
E.5 Flat-Earth Short-Range Coordinate System	E.5 Sending Target Reports in Multiple Packets
E.6 Spaceborne Coordinate Systems	E.6 Generic Packet Splitting Algorithm
E.7 Position Location Methods in GMTI Format	
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E.9 Time Standards and Position Location Systems	
ANNEX F: Country Codes in STANAG 4607	ANNEX F: Coordinate Systems and Time Standards
F.1 Introduction	F.1 Geodetic Coordinate System
F.2 References	F.2 Earth-Centered Earth-Fixed (ECEF) and Earth-Centered Inertial Systems
F.3 Background	F.3 Topocentric Coordinate System (TCS)
F.4 FIPS 10-4	F.4 Sensor-Centered Coordinate System
F.5 ISO 3166-1	F.5 Flat-Earth Short-Range Coordinate System
F.6 STANAG 1059	F.6 Spaceborne Coordinate Systems
F.7 Country Codes in STANAG 4607	F.7 Position Location Methods in GMTI Format
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ANNEX G: XML Schemas for STANAG 4607	ANNEX G: Country Codes in STANAG 4607
G.1 Introduction	G.1 Introduction
G.2 Why GMTI XML?	G.2 References
G.3 Overview of the GMTI XML Schemas	G.3 Background
G.4 Official Registration of the GMTI XML Schemas	G.4 FIPS 10-4
G.5 Configuration Management of the GMTI XML Schemas	G.5 ISO 3166-1
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	H.3 Overview of the GMTI XML Schemas
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J.4 Change Identification	J.4 Testing Policies
J.5 Configuration Management	J.5 STANAG 4607 Test Criteria
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ANNEX L: Guidelines for Adding New Capabilities to STANAG 4607	ANNEX L: STANAG 4607 Reference Library Programming Guide
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ANNEX N: Registry of Controlled Extensions for STANAG 4607	ANNEX N: Glossary of Terms
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N.2 Overview of Controlled Extensions	
N.3 Identification of Controlled Extensions	
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	O.1 Scope
	O.2 Overview of Controlled Extensions
	O.3 Identification of Controlled Extensions
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	ANNEX P: Changes from version to version in STANAG 4607

	P.1 Errata Sheet No. 3 to STANAG 4607
	ANNEX Q: Changes from version to version in AEDP-7
	Q.1 New AEDP-7 Sections
	Q.2 Errata Sheet No. 2 to AEDP-7

N.2 Errata Sheet No. 2 to AEDP-7

This section shows Errata Sheet No. 2 from AEDP-7 Edition 1. It shows the changes, modifications and updates made to AEDP-7 Edition 2 from AEDP-7 Edition 1.

NAT OTA

NATO Air Force Armaments Group (NAFAG)
Joint Capability Group on ISR (JCGISR)
GMTIF Custodial Support Team

ORIGINAL: ENGLISH
30 April 2012

ERRATA Sheet
AEDP-7 CST (JCGISR)/E-1

NATO Joint Capability Group on ISR
NATO Ground Moving Target Indicator Format
(GMTIF) Implementation Guide
Custodial Support Team
Errata Sheet No. 2 to AEDP-7 Edition 1

This document defines known editorial and/or technical errors in AEDP-7 Edition 1 as of the date of release. The following changes have been incorporated in AEDP-7 Edition 2.

Users of AEDP-7 should be aware that these corrections will be included in the next official release of the AEDP 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 the AEDP and forms the baseline for use of the guide.

It should be noted that approved administrative and/or technical changes are combined under 'Approve Changes'. It is expected that changes will be collected in the form of this Errata Sheet until the Custodian and the 4607 Custodial Support Team (4607 CST) decides that sufficient changes are identified to warrant either an amendment or a new edition. A new edition will incorporate all outstanding changes into a ratification draft for the next edition and this draft will be forwarded to the 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 AEDP is generated. Therefore, use of the latest list to supplement the AEDP 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.

Document Name:	*Document Number:*
NATO Ground Moving Target Indicator Format (GMTIF) Implementation Guide	AEDP-7
Edition Number:	*Amendment Number:*
Edition 1	None

Approved Changes:

The following changes were approved by the Custodian and the 4607 Custodial Support Team. These changes will be incorporated into the next amendment or edition as deemed appropriate by the Custodian and the 4607 Custodial Support Team.

Item No.	*Document Location*	*Current Text*	*New Text*
i	Annex Additions	None	Added "Options for Dissemination of GMTI Information Using NATO ISR STANAGs" Annex. Named it as Annex C. This caused all subsequent annexes to change by one letter. Subsequently, Annex and Page numbers discussed in the below Item Numbers are one off. Added Annex P. "Changes from version to version in STANAG 4607" Added Annex Q. "Changes from version to version in AEDP-7" .
1	Page iv, Foreword, first paragraph, seventh line of text.	…Joint Capability Group on Intelligence, Surveillance and Reconnaissance (JCG-ISR…	…Joint Capability Group on Intelligence, Surveillance and Reconnaissance (JCGISR…
2	Page iv, Foreword, second paragraph, first line of text.	The NATO JCG-ISR GMTIF Custodial Support Team…	The NATO JCGISR GMTIF Custodial Support Team…
3	Page iv, Table of Contents, Annex F.	Entries for Annex F, as shown in the "Change FROM" column in Item 4 below.	Entries for Annex F, as shown in the "Change TO" column in Item 5 below.

Item No.	*Document Location*	*Current Text*	*New Text*
4	Change entries for Annex F FROM: ANNEX F: Country Codes in STANAG 4607 F.1 Introduction F.2 References F.3 Background F.4 FIPS 10-4 F.5 ISO 3166-1 F.6 STANAG 1059 F.7 Country Codes in STANAG 4607 F.8 The US Approach to Country Code Designations Recommendations for STANAG 4607		
5	Change entries for Annex F TO: ANNEX F: Country Codes in STANAG 4607 F.1 Introduction F.2 References F.3 Background F.4 FIPS 10-4 F.5 ISO 3166-1 F.6 STANAG 1059 F.7 Alternative Approaches to Country Code Designations F.8 Country Codes in STANAG 4607 Recommendations for STANAG 4607		
6	Page 1, Paragraph 2, first paragraph, eleventh line of text.	…can use more aspects of the format to encode all of the information.	…can use more aspects of the format to encode additional information.
7	Page 1, Paragraph 2, second paragraph, lines seven to ten of text.	Mandatory Fields are essential to the format and must always be sent. Conditional Fields are dependent on the presence or absence or the value of certain other fields and are sent only if they meet established conditions. Optional Fields are not required…	Mandatory fields are essential to the format and must always be sent. Conditional fields are dependent on the presence or absence or the value of certain other fields and are sent only if they meet established conditions. Optional fields are not required…
8	Page A-1, Paragraph A.1.1, first paragraph, sixth line of text.	…Joint Capability Group for ISR, JCG-ISR) recognized…	… Joint Capability Group for ISR, JCGISR) recognized…
9	Page A-1, Paragraph A.1.1, first paragraph, tenth line of text.	…the Imagery Working Group (IMWG) of the JCG-ISR.…	…the Imagery Working Group (IMWG) of the JCGISR.…

Item No.	*Document Location*	*Current Text*	*New Text*
10	Page A-2, Paragraph A.1.2, second paragraph, eighth line of text.	… they are not implemented in this version of the standard…	… they are not implemented in the current version of the standard…
11	Page A-2, Paragraph A.1.2, third paragraph.	**Part 3 of the STANAG includes two additional Segments, Job Request and Job Acknowledge, which are used to request and acknowledge service by a radar sensor. The Segments in Part 3 are structured and used identically to those in Part 2.**	Part 3 of the STANAG includes two additional segments, Job Request and Job Acknowledge, which are used to request and acknowledge service by a radar sensor. The segments in Part 3 are structured and used identically to those in Part 2.
12	Page A-5, Paragraph A.2, third paragraph, fifth bullet, first line of text.	Exploitation Systems: Trackers, situational awareness displays…	Exploitation Systems: Includes systems and capabilities such as trackers, situational awareness displays…
13	Page B-1, Paragraph B.2, first paragraph, 18th line of text.	…an International Standards organization (ISO) document…	…an International Standards Organization (ISO) document…
14	Page B-1, Paragraph B.2, first paragraph, 21st line of text.	The NSIF Profile to the BIFF is the standard…	… The NSIF Profile to the BIFF will be the standard…
15	Page B-1, Paragraph B.2, first paragraph, 23rd line of text.	…and forms the compliance document…	…and will form the compliance document…
16	Page B-2, Paragraph B.2, third paragraph, fifth line of text.	…are detailed in Annex A of STANAG 4607…	…are detailed in Part 2 of Annex A to STANAG 4607…
17	Page B-13, Paragraph B.3, seventh paragraph, fourth line of text.	The binary form of the source address is…	The binary form of the Source Address is…
18	Page B-17, Paragraph B.4, fifth paragraph, fifth line of text.	…stores, as described above…	…stores, as shown in the figure…
19	Page B-19, Paragraph B.4, sixth paragraph, third line of text.	…search the library holdings of various servers discovered, order products…	…search the library holdings of the discovered servers, order products…
20	Page D-1, Paragraph D.1, second paragraph, sixth line of text.	…and Section D.5 describes a "generic" algorithm..	…and Section E.6 describes a "generic" packet splitting algorithm…

Item No.	*Document Location*	*Current Text*	*New Text*
21	Page E-2, Paragraph E.2, sub-paragraph (b), second paragraph, first line of text.	This system is commonly used…	The Earth-Centered Inertial system is commonly used…
22	Page E-11, Paragraph E-7.	Boxes around mathematical formulas (two places).	Delete the boxes around the mathematical formulas (two places).
23	Page E-12, Paragraph E-7.	Boxes around mathematical formulas (three places).	Delete the boxes around the mathematical formulas (three places).
24	Page E-13, Paragraph E-7.	Boxes around mathematical formulas (three places, plus the extraneous box around the middle formula).	Delete the boxes around the mathematical formulas (three places, plus the extraneous box around the middle formula).
25	Page E-13, Paragraph E-7, last text paragraph on page E-13.	<u>*Left-aligned text*</u>: *Under most circumstances the Latitude and Longitude Scale factors (Fields D10 and D11 of the Dwell Segment, Paragraph 2.4 of Annex A to STANAG 4607) will be chosen by a simple proportional scaling of the dwell dimensions as follows. Let D_{lat} denote the latitude extent of the dwell and D_{long} denote the longitude extent of the dwell. Then, provided the quantization tests (described below) are passed, the scaling factors will be given by*	<u>*Change to justified text*</u>: *Under most circumstances the Latitude and Longitude Scale factors (Fields D10 and D11 of the Dwell Segment, Paragraph 2.4 of Annex A to STANAG 4607) will be chosen by a simple proportional scaling of the dwell dimensions as follows. Let D_{lat} denote the latitude extent of the dwell and D_{long} denote the longitude extent of the dwell. Then, provided the quantization tests (described below) are passed, the scaling factors will be given by*
26	Page E-14, Paragraph E-7.	Box around mathematical formula (one place).	Delete the box around the mathematical formula (one place).
27	Page F-1, Paragraph F.2, References.	Table entries, as shown in the "<u>Change FROM</u>" column in Item 28 below.	Table entries, as shown in the "<u>Change TO</u>" column in Item 29 below.

<table>
<tr><th>Item No.</th><th>Document Location</th><th>Current Text</th><th>New Text</th></tr>
<tr><td>28</td><td colspan="3"><u>Change the table entries FROM</u>:

REF. DESIGNATION DATE DESCRIPTION
1 Federal Information Special Processing Standards Publication 10-4 | April 1995 | Countries, Dependencies, Areas Of Sovereignty, and Their Principal Administrative Divisions
3 ISO 3166-1:2006 | November 2006 (Edition 2) | Codes for the representation of na of countries and their subdivisions Part 1: Country codes
2 STANAG 1059 (Edition 8) | February 2004 | Letter Codes for Geographical Entities</td></tr>
<tr><td>29</td><td colspan="3"><u>Change the table entries TO:</u>

REF. DESIGNATION DATE DESCRIPTION
1 Federal Information Special Processing Standards Divisions Publication 10-4 | April 1995 | Countries, Dependencies, Areas Of Sovereignty, and Their Principal Administrative
2 ISO 3166-1:2006 | November 2006 (Edition 2) | Codes for the representation of nam of countries and their subdivisions - Part 1: Country codes
3 STANAG 1059 (Edition 8) | February 2004 | Letter Codes for Geographical Entities</td></tr>
<tr><td>30</td><td>Page F-2, Paragraph F.5, second line of text.</td><td>…Codes for the representation of names of countries)and their subdivisions…</td><td>…Codes for the representation of names of countries and their subdivisions…</td></tr>
<tr><td>31</td><td>Page F-2, new Paragraph F.7 heading, following the last line of text in Paragraph F.6.</td><td>None</td><td>F.7 Alternative Approaches to Country Code Designations</td></tr>
</table>

Item No.	*Document Location*	*Current Text*	*New Text*
32	Page F-2, new Paragraph F.7 text, following the new heading inserted in Item 31 above.	**None**	In an effort to reduce the confusion caused by multiple standards for specifying country codes, some Nations have developed techniques for alternative designations of country codes. A typical technique is to use a look-up table to correlate between digraphs and trigraphs of various standards. One example of such an effort was the work of the GEOINT Standards Working Group (GWG), a US organization, which directed their Metadata Focus Sub-Group (MFG) to determine a potential solution to the issue. The initial product of the MFG was a White Paper which proposed several options to resolve the problem. Based on that paper, the preferred solution was to create a new U.S. standard, FIPS 10-5, to replace the current FIPS 10-4 standard. FIPS 10-5 would include a definitive crosswalk (or look-up table) between legacy FIPS 10-4 geopolitical entities and their two-character codes and the equivalent entities and codes in ISO 3166-1.
33	Page F-2, original Paragraph F.7 heading.	F.7 Country Codes in STANAG 4607	F.8 Country Codes in STANAG 4607
34	Pages F-3 and F-4, original Paragraph F.8 heading and text.	Original Paragraph F.8 heading and text.	Delete original Paragraph F.8 heading and text in its entirety.
35	*Page F-4, Paragraph F.9, first paragraph, third line of text.*	…it is recommended that implementers of the STANAG…	…it is recommended that implementers of STANAG 4607…
37	*Page F-4, Paragraph F.9, first paragraph, 11th and 12th lines of text.*	…(described above in paragraph F.7)…	…(described above in paragraph F.8)…

Item No.	Document Location	Current Text	New Text
38	*Page G-6, Paragraph G.5, first paragraph, fifth and sixth lines of text.*	It is encouraged that the NATO nations participate…	NATO nations are encouraged to participate…
39	Page I-2, Paragraph I.2.4.2, second entry.	Allied Engineering Documentation Publication No. 7 (AEDP-7), Ratification Draft 1, February 2008: NATO GMTIF Implementation Guide	Allied Engineering Documentation Publication No. 7 (AEDP-7), Edition 1, April 2008: NATO GMTIF STANAG 4607 Implementation Guide
40	Page I-5, Paragraph I.3.2, third line of text.	… Joint Capability Group for ISR (JCG-ISR…	…Joint Capability Group for ISR (JCGISR…
41	*Page I-5, Paragraph I.3.2, fifth line of text.*	The JCG-ISR oversees the process…	The JCGISR oversees the process…
42	Page I-5, Paragraph *I.3.2, seventh line of text.*	The JCG-ISR appoints…	The JCGISR appoints…
43	Page I-8, Paragraph I.4.5, second line of *text.*	…for the JCG-ISR…	…for the JCGISR…
44	*Page I-13, Paragraph I.9.1, sub-paragraph (2), following header.*	None	Add the following text after the sub-paragraph heading: The GMTIF packet must be constructed in accordance with the following criteria:
45	Page I-13, Paragraph I.9.1, sub-paragraph (2), sixth bullet, second *sub-bullet.*	HHR	HRR
46	*Page I-14, Paragraph I.9.1, sub-paragraph (2), eighth bullet.*	Both unpack/interpret and pack/generate applications must support the Exploitation Classes as defined in Annex C of this AEDP.	Both unpack/interpret and pack/generate applications must support the three Exploitation Classes defined in Annex C of this AEDP.
47	*Page I-14, Paragraph I.9.2, sub-paragraph (2), first bullet.*	Both interpreting and generating applications must support Packet Header.	Both interpreting and generating applications must support the Packet Header.

Item No.	*Document Location*	*Current Text*	*New Text*
48	*Page I-22, Table I-4.*	Table I-4. Dwell Segment (Con't)	Combine the tables by deleting the heading in the middle of the table, the titles on the row preceding field D5, and the extra lines between the two portions of the table.
49	*Page I-28, Table I-5.*	Table I-5. High-Range Resolution Segment (Con't)	Combine the tables by deleting the heading in the middle of the table, the titles on the row preceding field H8, and the extra lines between the two portions of the table.
50	*Page I-30, Paragraph I.9.7, sub-paragraph (2), first paragraph, lines five and six of text.*	(Note that Table I-6 correlates to Table 2-7 in Part 2 of Annex A to STANAG 4607.)	(Note that Tables I-6, I-6.1, and I-6.2 correlate to Tables 2-7, 2-7.2, and 2-7.3, respectively, in Part 2 of Annex A to STANAG 4607.)
51	*Page I-41, Paragraph I.9.16, sub-paragraph (2), first paragraph, first line of text.*	The Job Request Segments provides…	The Job Request Segment provides…
52	*Page I-44, Table I-11, Field R19, Comment and/or Value Range column, second and third lines of text.*	… after which the request it to be abandoned…	… after which the request is to be abandoned…
53	*Page I-45, Paragraph I.9.17, sub-paragraph (2), first paragraph, first line of text.*	The Job Acknowledge Segments provides…	The Job Acknowledge Segment provides…

Item No.	***Document Location***	***Current Text***	***New Text***
54	*Page I-48, Paragraph I.9.17, sub-paragraph (1).*	This subtest only applies to interpret capable applications, since generating systems that are compliant to STANAG 4607 should not be creating data packets with errors. Determine to what extent a GMTIF interpreting application can handle GMTIF Packets containing errors as well as GMTIF Packets with unsupported segments.	Determine to what extent a GMTIF interpreting application can handle GMTIF Packets containing errors as well as GMTIF Packets with unsupported segments. (NOTE: This subtest only applies to interpret capable applications, since generating systems that are compliant to STANAG 4607 should not be creating data packets with errors.)
55	*Page J-1, paragraph J.1.1.1, header text.*	Documents Included In This Configuration Management Structure:	Documents included in this Configuration Management Plan:
56	*Page J-1, paragraph J.1.1.2, header text.*	Other Referenced Documents:	Other referenced documents:
57	*Page J-1, paragraph J.1.1.2, entry text.*	AAP-3 Procedures for the Development, Preparation, Production, and the Updating of NATO Standardization Agreements (STANAGs) and Allied Publications (APs)	AAP-3(I) Directive for the Development and Production of NATO Standardization Agreements (STANAGs) and Allied Publications (APs)
58	*Page J-1, current Paragraph 2, header text.*	**2 Scope**	**J.2 Scope**
59	*Page J-2, new Paragraph J.2 heading, first paragraph, lines nine, ten, and eleven of text.*	…defined in AAP-3, *Procedures for the Development, Preparation, Production, andthe Updating of NATO Standardization Agreements (STANAGs) and Allied Publications (APs)*.	…defined in AAP-3(I), *Directive for the Development and Production of NATO Standardization Agreements (STANAGs) and Allied Publications (APs)*.

Item No.	Document Location	Current Text	New Text
60	*Page J-5, Paragraph J.4.3, text paragraph.*	J.4.3. All change requests shall identify the proposed change as either Class I (amendments of substance) or Class II (editorial amendments). Class I changes modify the functionality of the standard (requires software change to comply). This includes changes to the order of fields, changes to the allowed or required values for a field, or additions/deletions of fields or approved values. Class I changes are those identified as changes of substance in paragraph 212.2. of AAP-3(H). Class II changes are for administrative or editorial revisions or to clarify the usage of the STANAG. These changes are those identified as editorial amendments in paragraph 212.3 of AAP-3(H). Class II changes also includes those values shown in the STANAG as examples.	J.4.3. All change requests shall identify the proposed change as either amendments of substance (formerly identified as Class I changes) or editorial amendments (formerly identified as Class II changes). Amendments of substance modify the functionality of the standard and will require software changes to comply. This includes changes to the order of fields, changes to the allowed or required values for a field, or additions/deletions of fields or approved values. Changes of substance are those identified as ratifiable changes in paragraph 211.2. of AAP-3(I) and require a new edition of the STANAG. Editorial amendments are for administrative or editorial revisions or to clarify the usage of the STANAG. These changes are those identified as non-ratifiable changes in paragraph 211.1 of AAP-3(I) and are made by issuing sequential amendments to the current edition of the STANAG as replacement pages. Editorial amendments also include those values shown in the STANAG as examples.
61	*PageJ-6, Paragraph J.5, first paragraph, first line of text.*	…as defined in AAP-3(H)…	…as defined in AEDP-2…
62	*Page J-6, Paragraph J.5, first paragraph, third line of text.*	AAP-3(H) does not specify…	AEDP-2 does not specify…
63	*Page J-7, Figure J-1, text in third box on right side.*	CLASS II CHANGES SUBMITTED TO SECRETARY/NSA FOR PROMULGATION	EDITORIAL CHANGES SUBMITTED TO SECRETARY/NSA FOR PROMULGATION

64	*Page J-7, Figure J-1, text in fourth box on right side.*	CLASS I CHANGES SUBMITTED TO SECRETARY/NSA FOR NATIONAL RATIFICATION	SUBSTANTIVE CHANGES SUBMITTED TO SECRETARY/NSA FOR NATIONAL RATIFICATION
65	*Page J-8, paragraph J.5.2.2.1, second line of paragraph text.*	Class I changes require unanimous consent…	Substantive changes require unanimous consent…
66	*Page J-8, paragraph J.5.2.2.1, third and fourth lines of paragraph text.*	Class II changes require a majority vote…	Editorial changes require a majority vote…
67	*Page J-8, paragraph J.5.3.2, fifth line of paragraph text.*	Revisions with Class I changes…	Revisions with substantive changes…
68	*Page J-8, paragraph J.5.3.2, seventh line of paragraph text.*	Revisions with only Class II changes…	Revisions with only editorial changes…
69	*Page 1-J-1, Change Proposal Form, Instructions, Item 3, lines two and three.*	…Joint Capability Group for ISR (JCG-ISR). (See the NATO NAFAG JCG-ISR Internet web page…	…Joint Capability Group for ISR (JCGISR). (See the NATO NAFAG JCGISR Internet web page…
70	*Page 1-J-1, Change Proposal Form, Instructions, Note, line two.*	…available on the NATO NAFAG JCG-ISR Internet home page…	…available on the NATO NAFAG JCGISR Internet home page…
71	*Page 1-J-1, Change Proposal Form, field 6.*	6. Change Class: I | | II | |	6. Change Class: Substantive | | Editorial | |
72	*Page L-1, Paragraph L.2, first paragraph, tenth line of text.*	…information such as Sea State or other parameters appropriate to…	…information appropriate to…
73	*Page L-1, Paragraph L.2, first paragraph, twelfth line of text.*	…to allow it to be linked…	…to allow them to be linked…
Item No.	*Document Location*	Current Text	New Text
74	*Page N-1, Paragraph N.2, third paragraph, first line of text.*	Paragraph N.4 of this Annex…	Section N.4 of this Annex…

<table>
<tr><td>75</td><td>Page N-2, Paragraph N.3.1, first paragraph.</td><td>Table N-1 provides a record of each Controlled Extension to STANAG 4607. The first column of the table provides a paragraph reference in this Annex for each Controlled extension. The second column, Header Segment Designation, specifies the value for each Controlled Extension to be entered in the Value Range column of the Segment Header, Table 2-2 of Part 2 of Annex A to STANAG 4607. The remaining columns provide information related to the date for which each Controlled Extension was submitted and entered into the Registry, the date the extension was validated, the organization or user submitting the extension, and the approving authority for moving the extension from the Compendium of Registered Extensions to the Registry of Controlled Extensions.</td><td>Table N-1 provides a record of each Controlled Extension to STANAG 4607. The first column of the table provides a paragraph reference in this Annex for each Controlled Extension. The Header Segment Designation column specifies the value for each Controlled Extension to be entered in the Value Range column of the Segment Header, Table 2-2 of Part 2 of Annex A to STANAG 4607. The remaining columns provide the title of the extension, the date on which the extension was validated, and the approval date and approving authority for moving the extension from the Compendium of Registered Extensions to the Registry of Controlled Extensions.</td></tr>
<tr><td>76</td><td>Page N-3, Table N-1, entries in Header row.</td><td>Entries in Header row, as shown in the “Change FROM” column in Item 77 below.</td><td>Entries in Header row, as shown in the “Change TO” column in Item 77 below.</td></tr>
<tr><td>77</td><td colspan="3"><u>Change entries in Header row FROM:</u>
<table><tr><th>Ref. Para.</th><th>Header Segment Designation</th><th>Title of Controlled Extension</th><th>Date Of Submission</th><th>Submitted By</th><th>Date Of Validation</th><th>Approved By</th><th>Comments</th></tr></table>
<u>Change entries in Header row TO:</u>
<table><tr><th>Ref. Para.</th><th>Header Segment Designation</th><th>Title of Controlled Extension</th><th>Date Of Validation</th><th>Date Of Approval</th><th>Approved By</th><th>Comments</th></tr></table></td></tr>
<tr><td>78</td><td>Table 2-4, Field D26, Value Range Column, p. B-16</td><td>0 to 255.9928</td><td>0 to 255.9921875</td></tr>
</table>

79	*Table 2-5, Field H11, H12, H15, H19, Value Range Column, p. B- 31*	H11: 0.001 to 256 H12: 0.001 to 256 H15: 2.384e-7 to 256 H19: -255.999 to 255.999	0.001 to 255.9921875 0.001 to 255.9921875 2.384e-7 to 255.9921875 -255.9921875 to 255.9921875

N.3 Approved Changes to AEDP 4607.1 Edition A Version 1

This section summarizes the content within AEDP 4607.1 Edition A Version 1 which is modified from that of AEDP-7 Edition 2. The following changes were approved by the Custodian and the 4607 Custodial Support Team.

Item No.	*Document Location*	*Current Text*	*New Text*
i	Annex Additions	ANNEX B: STANAG 4607,Edition 3 Format Specification Part 1 - General B.1 Scope B.2 Definitions B.3 Data and Packet Structure Part 2 - Header and Segment Descriptions Appendix 1. Alphanumeric Character Set Appendix 2. Terms and Definitions ANNEX G: Country Codes in STANAG 4607 G.1 Introduction G.2 References G.3 Background G.4 FIPS 10-4 G.5 ISO 3166-1 G.6 STANAG 1059 G.7 Alternate Approaches to Country Code Designations G.8 Country Code in STANAG 4607 G.9 Recommendations for STANAG 4607 ANNEX H: XML Schemas for STANAG 4607 H.1 Introduction H.2 Why GMTI XML? H.3 Overview of the GMTI XML Schemas H.4 Official Registration of the GMTI XML Schemas H.5 Configuration Management of the GMTI XML Schemas ――― C.3 Embedding the GMTI Format into STANAG 7023 ――― Q.1 New AEDP-7 Sections	Removed “Annex B: STANAG 4607, Edition 3 Format Specification”, “Annex G: Country Codes in STANAG 4607” and “Annex H: XML Schemas for STANAG 4607”. Subsequently, this caused all annexes that follow to be changed by one letter. ――― Removed subsection: “B.3 Embedding the GMTI Format into STANAG 7023.” Content moved to STANAG 7023. ――― Removed content of subsection I.9.20: “Subtest 20, Embedding GMTIF in NATO Primary Imagery Format (NPIF, STANAG 7023)” Content moved to STANAG 7023. ――― New Annex M subsection: “M.2 Approved Changes to AEDP-4607 Edition A Version 1” ――― Modified Annex N subsection title: “N.1 Approved Changes to AEDP-7 Edition 2” ――― New Annex N subsection: “N.3 Approved Changes to AEDP 4607.1 Edition A Version 1”
ii	Entire Document	FIPS PUB 10-4	Table 3-3 of the standard

Item No.	*Document Location*	*Current Text*	*New Text*
1	Page iii	Record of Changes	New Tables: Record of Reservations Record of Specific Reservations (*Note: Template Change*)
2	Annex A, subsection A.4, page A-2, first paragraph	Refer to Annex B of this document for a discussion of procedures for embedding the GMTI Format into STANAG 4545 or STANAG 7023 and using it with STANAG 4559.	Refer to Annex B of this document for a discussion of procedures for embedding the GMTI Format into STANAG 4545 and using it with STANAG 4559.
3	Annex B, subsection B.1, page B-1, first paragraph	This Annex describes notional ideas of techniques for embedding the GMTI Format into STANAGs 4545 and 7023 and for dissemination of GMTI data through STANAG 4559 libraries. GMTI information could also be translated (mapped) from the binary form specified by STANAG 4607 to an XML form for dissemination.	This Annex describes notional ideas of techniques for embedding the GMTI Format into STANAGs 4545 and for dissemination of GMTI data through STANAG 4559 libraries.
4	Annex C, subsection C.2, page C-1, second bullet	• **Targeting and Tracking (TT):** The minimum data required for targeting and tracking of MTI targets using current or advanced automatic tracking algorithms or precision location systems such as the Global Positioning System (GPS).	• **Targeting and Tracking (TT):** The minimum data required for targeting and tracking of MTI targets using current or advanced automatic tracking algorithms or precision location systems.
5	Annex C, subsection C.5, page C-6, text under Table C-6	(*NOTE: Packet sizes for Precision Targeting and Advanced Tracking with HRR assume 128 Scatterer Records per Target and 4 Bytes per Scatterer Record.)	(*NOTE: Packet sizes for Precision Targeting and Advanced Tracking with HRR assume 128 Scatterer Records per Target and 4 Bytes per Scatterer Record. Selection of HRR/RDM may change these results.)

Item No.	*Document Location*	*Current Text*	*New Text*
6	Annex F, page F-7	**Question 16**: How are the versions of STANAG 4607 identified? **Answer 16**: Versions of STANAG 4607 are identified as Edition Number and Amendment Number. The version identification code, transmitted as a two-character alphanumeric code in Field P1 of the Packet Header, indicates the version of STANAG 4607 to which the packet conforms. It is of the form “mn”, where “m” indicates the Edition Number and “n” indicates the Amendment Number of that edition. For example, a value of “10” indicates that it is Edition 1 without any amendments. A value of “11” indicates that it is Edition 1 with Amendment 1 incorporated, and a value of “20” indicates that it is the second edition without any amendments.	**Question 16**: How are the versions of STANAG 4607 identified? **Answer 16**: Historically, the edition of the standard (“m”) is captured as a number. Due to the current NSO naming conventions, editions are now letters. Therefore, edition “A” equates to the number 4, “B” to the number 5 and so on. The version (“n”) should be a number and directly correspond to the standard’s version number.
67	Annex F, page F-8		**Question 17**: What is the relationship between AEDP-4607 and AEDP 4607.1 to STANAG 4607? **Answer 17**: Early versions of the STANAG 4607 standard were published directly within the STANAG 4607 document. Today, the STANAG document simply describes the agreement to use the standard now captured in AEDP-4607. The implementation guidance for this standard is published in a separate document numbered AEDP-4607.1
8	Annex G, subsection G.9.7, page G-32		Added new table: “Table G-6. High-Range Resolution Segment”

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