MAS

NORTH ATLANTIC TREATY ORGANIZATION
ORGANISATION DU TRAITE DE L'ATLANTIQUE NORD

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19 May 2000 MAS/0585-C3/4207

STANAG 4207 C3 (EDITION 3) - NATO MULTI-CHANNEL TACTICAL GATEWAY - MULTIPLEX GROUP FRAMING STANDARDS

Reference:
MAS/415-EL/4207 dated 15 November 1993 (Edition 2)

1. The enclosed NATO Standardization Agreement which has been ratified by nations as reflected in page iii is promulgated herewith.

2. The reference listed above is to be destroyed in accordance with local document destruction procedures.

3. AAP-4 should be amended to reflect the latest status of the STANAG.

ACTION BY NATIONAL STAFFS

4. National staffs are requested to examine page iii of the STANAG and, if they have not already done so, advise the NHQC3S, through their national delegation as appropriate of their intention regarding its ratification and implementation.

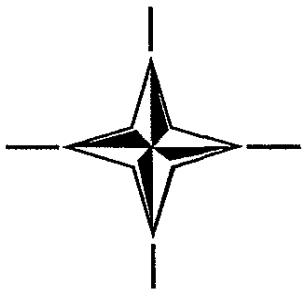
A. GRØNHEIM
Major General, NOAF
Chairman, MAS

Enclosure:
STANAG 4207 (Edition 3)

0585E-00ST4207/nh

STANAG No. 4207
(Edition 3)

NORTH ATLANTIC TREATY ORGANIZATION
(NATO)



MILITARY AGENCY FOR STANDARDIZATION
(MAS)

STANDARDIZATION AGREEMENT

(STANAG)

SUBJECT: NATO MULTI-CHANNEL TACTICAL GATEWAY - MULTIPLEX GROUP FRAMING STANDARDS

for Promulgated on 19 May 2000

A. GRØNHEIM
Major General, NOAF
Chairman, MAS

RECORD OF AMENDMENTS

No.	Reference/date of amendment	Date entered	Signature

EXPLANATORY NOTES

AGREEMENT

1. This NATO Standardization Agreement (STANAG) is promulgated by the Chairman MAS under the authority vested in him by the NATO Military Committee.

2. No departure may be made from the agreement without consultation with the tasking authority. Nations may propose changes at any time to the tasking authority where they will be processed in the same manner as the original agreement.

3. Ratifying nations have agreed that national orders, manuals and instructions implementing this STANAG will include a reference to the STANAG number for purposes of identification.

DEFINITIONS

4. Ratification is "In NATO Standardization, the fulfilment by which a member nation formally accepts, with or without reservation, the content of a Standardization Agreement" (AAP-6).

5. Implementation is "In NATO Standardization, the fulfilment by a member nation of its obligations as specified in a Standardization Agreement" (AAP-6).

6. Reservation is "In NATO Standardization, the stated qualification by a member nation that describes the part of a Standardization Agreement that it will not implement or will implement only with limitations" (AAP-6).

RATIFICATION, IMPLEMENTATION AND RESERVATIONS

7. Page iii gives the details of ratification and implementation of this agreement. If no details are shown it signifies that the nation has not yet notified the tasking authority of its intentions. Page iv (and subsequent) gives details of reservations and proprietary rights that have been stated.

FEEDBACK

8. Any comments concerning this publication should be directed to NATO/MAS - Bvd Leopold III - 1110 Brussels - BE.

NATO STANDARDIZATION AGREEMENT
(STANAG)

THE NATO MULTI-CHANNEL TACTICAL DIGITAL GATEWAY MULTIPLEX GROUP FRAMING STANDARDS

Annexes: A. Interface Description
B. Digital Transmission Group Multiplex Signal Format
C. Link Frame Synchronization and Control Procedures
D. NPICS Proforma

Related Documents:

STANAG 4206 - The NATO Multi-Channel Tactical Digital Gateway - System Standards

STANAG 4208 - The NATO Multi-Channel Tactical Digital Gateway - Signalling Standards

STANAG 4209 - The NATO Multi-Channel Tactical Digital Gateway - Standards for Analog-to-Digital Conversion of Speech Signal

STANAG 4210 - The NATO Multi-Channel Tactical Digital Gateway - Cable Link Standards

STANAG 4211 - The NATO Multi-Channel Tactical Digital Gateway - System Control Standards

STANAG 4212 The NATO Multi-Channel Tactical Digital Gateway - Radio Relay Link Standards

STANAG 4213 - The NATO Multi-Channel Tactical Digital Gateway - Data Transmission Standards

STANAG 4214 - International Routing and Directory for Tactical Communications Systems

STANAG 4249 - The NATO Multi-Channel Tactical Digital Gateway - Data Transmission Standards (Packet Switching Service)

STANAG 4290 The NATO Multi-Channel Tactical Digital Gateway - Cable Link (Optical) Standards

STANAG 4380 Technical Standards for Analog to Digital Conversion of Voice Signals

INTRODUCTION

1. This STANAG is one of a series that, when taken together, specifies all the technical characteristics, parameters, and procedures necessary for two NATO tactical digital communications systems (networks) to interconnect and exchange traffic via a gateway.

2. STANAG 4206, the NATO Multi-Channel Tactical Digital Gateway - System Standards, provides an overview of the gateway concept and summarizes the key requirements and characteristics contained in this STANAG and others in this series.

AIM

3. The aim of this agreement is to define the multiplex group frame format, framing signals, and framing (synchronization) procedures necessary for interoperation between two NATO tactical digital communications systems via a gateway.

AGREEMENT

4. The participating nations agree to use the characteristics contained in this STANAG as the multiplex group framing standards in the exchange of traffic between tactical digital systems via a gateway.

GENERAL

5. The requirements and criteria contained herein for interfacing equipment shall be considered as a minimum.

6. This STANAG specifically applies to the multiplexed bit streams crossing the gateway link and to the interactions of the two terminating gateway facilities concerned with acquiring, monitoring, and re-establishing multiplex group frame synchronization.

IMPLEMENTATION OF AGREEMENT

7. This STANAG is implemented by a nation when its multi-channel tactical digital gateways (multiplex group framing standards) comply with this agreement and are placed in service.

ANNEX A to
STANAG 4207
(Edition 3)

INTERFACE DESCRIPTION

OPERATION

1. A digital transmission group (DTG) is organized as a synchronous, bit-interlaced, time-division multiplexed group of 16 digital channels. It shall operate in a full-duplex mode at a bit rate of 256 kilobits per second (kbit/s); however, optionally it may operate at 512 kbit/s (by bilateral agreement). All channels shall operate at the same bit rate, either 16 or 32 kbit/s, depending on the group rate.

DESCRIPTION

2. The interface between the gateway facilities (GF) of two nations shall be a time-division multiplexed signal on either a cable or radio connection as illustrated in Figure 1 of STANAG 4206. This STANAG provides a detailed description of the multiplexed signal format, frame patterns, and frame synchronization procedures applicable to the gateway interface. The basic interface parameters are listed in Table 1.

Table 1. Basic Interface Parameters

DTG Format Type	Multiplex Signal Format (MSF), for a 16 channel DTG
DTG Frame Duration	Fixed length, 0.0625/0.03125 milliseconds (ms), depending on channel bit rate
Traffic Channel Rate	All 16 or all 32 kbit/s
Signalling Channel Information Rate	16 kbit/s
Frame Patterns:	
Frame (F) Pattern	Sequence of 8 ones, 1 zero and 7 ones (11111111**0**1111111)*
Frame Request (FR) Pattern	Sequence of 1 one and 7 zeros followed by 1 one and 7 zeros (10000000**1**0000000)*
Frame Request Acknowledge (FRA) Pattern	Sequence of 1 one and 15 zeros (1000000000000000)*

Interchange of one pattern by another one shall be done in such a way that the underlined bit of one pattern is replaced by the underlined bit of another pattern.

Frame Control Signal Formats:	
Frame (F) Signal	Frame Pattern in frame bit time slots (time slot 0); all other time slots carry data as required.
Frame Request (FR) Signal	Frame Request Pattern in frame bit time slots (time slot 0); all other time slots set to zero.
Frame Request Acknowledge (FRA) Signal	Frame Request Acknowledge Pattern in frame bit time slots (time slot 0); all other time slots set to zero.

* The left most bit is transmitted first.

DIGITAL TRANSMISSION GROUP MULTIPLEX SIGNAL FORMAT

MULTIPLEX FRAME ORGANIZATION

1. The frame format shall consist of 16 contiguous time slots, as shown in *Figure* 1. These time slots are referenced by numbers 0 to 15 inclusive. Each time slot shall contain a single bit of information and be allocated to a single channel.

   a. Time slot 0 shall be allocated to the framing channel. From one frame to the next, the bit contained in this time slot shall follow one of the allowed frame patterns defined in Table 1 of Annex A. Recognition of one of these frame patterns allows for frame detection and synchronization.

   b. Time slot 1 shall be allocated to the signalling channel.

   c. The remaining time slots (numbered from 2 to 15 inclusive) shall be allocated to traffic channels.

2. The DTG shall use a fixed frame duration of 0.0625 milliseconds (ms) at the DTG bit rate of 256 kbit/s, and 0.03125 ms at the DTG bit rate of 512 kbit/s.

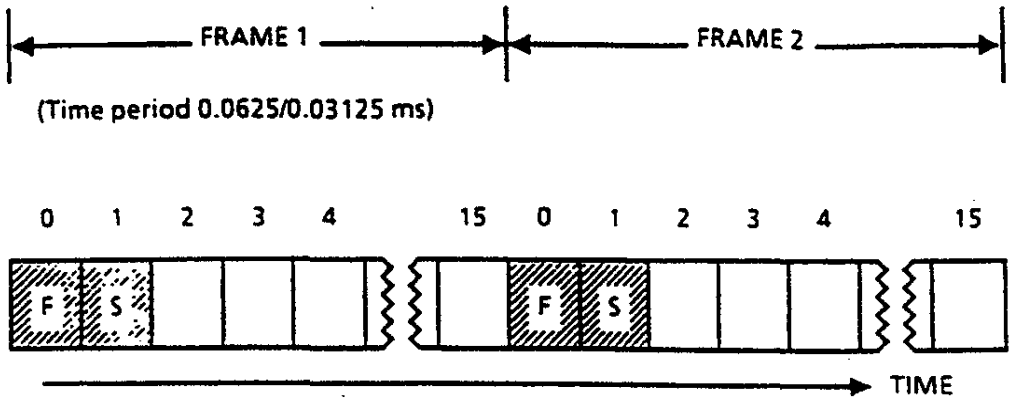
3. Framing Overhead Channel. The first overhead channel (time slot 0) of each frame shall contain one bit of a DTG frame pattern as defined in Table 1, Annex A of this STANAG.

4. When two GFs are in frame synchronization, the receiving GF monitors the Framing Overhead Channel for the F, FR, or FRA Pattern; or a loss of the frame pattern. The GF, upon distinguishing a change in the pattern, shall respond according to the Frame Synchronization and Control Procedures in Annex C to this STANAG.

5. Signalling Overhead Channel. The second overhead channel (time slot 1) is used for the common channel signalling information as defined in STANAG 4208. The signalling channel operates at a 16-kbit/s rate irrespective of the DTG bit rate of 256 or 512 kbit/s. When operating at the 512-kbit/s DTG rate, each bit of the 16-kbit/s signalling channel will be transmitted twice, that is, it shall occupy the signalling channel time slot in two successive .03125-ms frames. When FR or FRA is transmitted, the signalling channel shall be forced to carry zeros.

6. Traffic Channels. When the F signal is transmitted, all traffic channels (time slots 2 through 15, inclusive) shall carry data as required or ones for idle (unused) time slots. When FR or FRA is transmitted, all traffic channels shall be forced to carry zeros.

APPENDIX 1 to
ANNEX B to
STANAG 4207
(Edition 3)



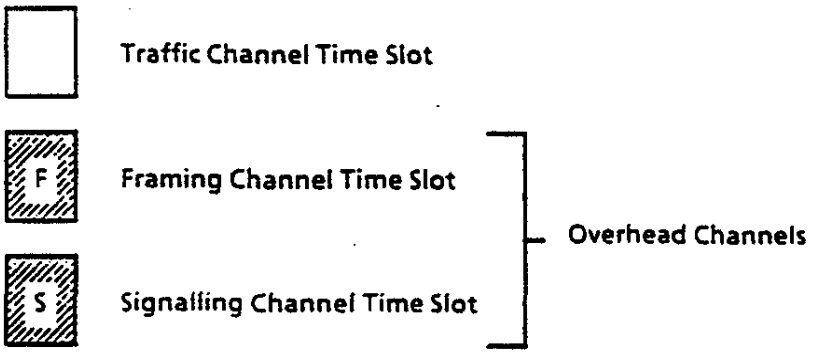


Figure 1. DTG Multiplex Signal Format Organization

LINK FRAME SYNCHRONIZATION AND CONTROL PROCEDURES

GENERAL

1. The following paragraphs describe the link frame synchronization and control procedures in general terms. These procedures are categorized into two modes; one is operation without delay (basic mode), the other is operation with delay. Figures 2 and 3 specify the procedures in state-transition diagram form and should be used as the definitive specification. Tables 2 and 3 are state tables that correspond to Figures 2 and 3, respectively. The link will normally employ link encryption devices (LED) to secure the DTG. LEDs may be omitted (by bilateral agreement) where an approved connection is provided.

2. If frame synchronization cannot be achieved in a reasonable time, then an appropriate alarm signal, will be activated.

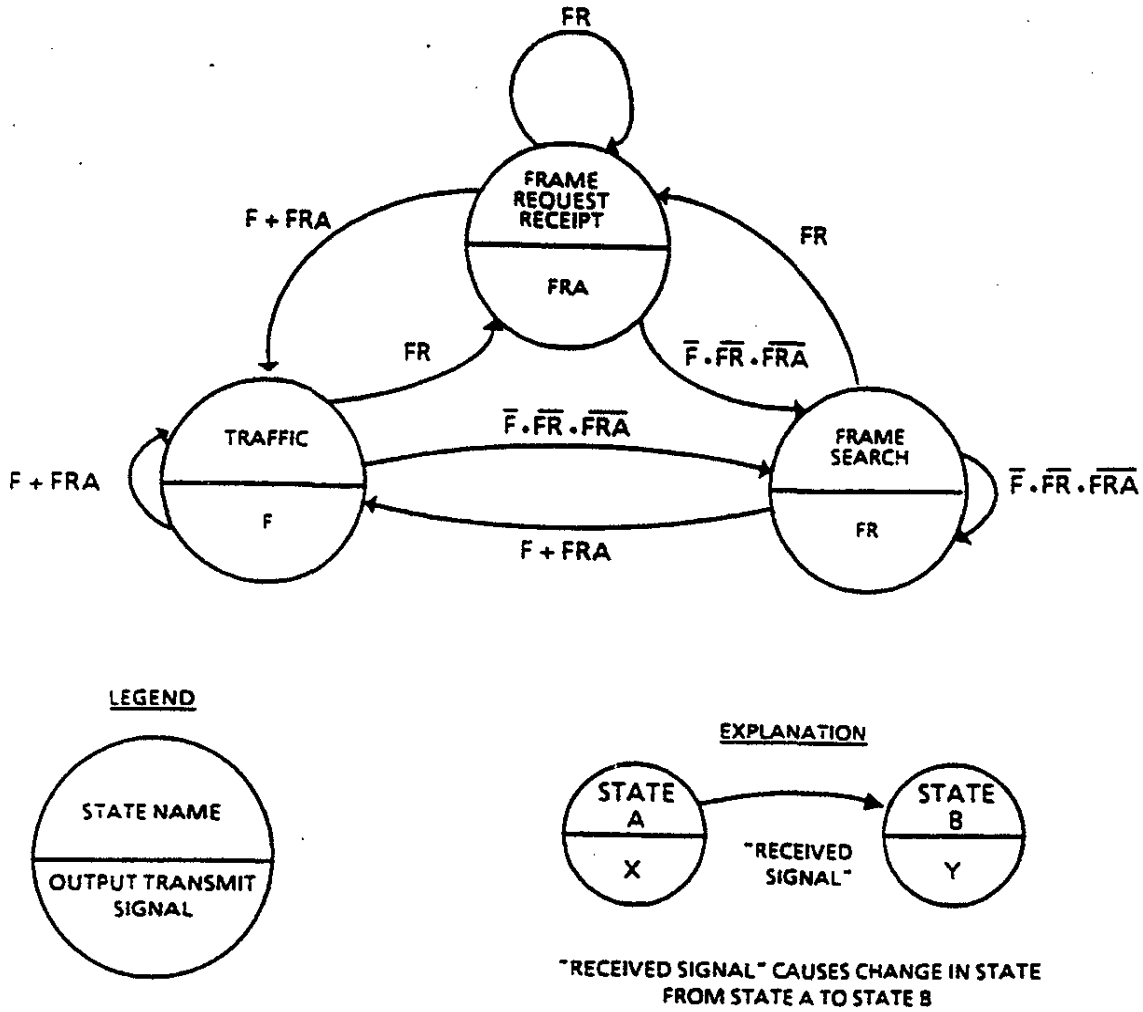


Figure 2. State Diagram - Operation without Delay (Basic Mode)

Table 2. Traffic States and Conditions

CONDITION (RECEIVED SIGNAL) \ STATE	TRAFFIC	FRAME SEARCH	FRAME REQUEST RECEIPT
F	TRAFFIC	TRAFFIC	TRAFFIC
FR	FRAME REQUEST RECEIPT	FRAME REQUEST RECEIPT	FRAME REQUEST RECEIPT
FRA	TRAFFIC	TRAFFIC	TRAFFIC
$\bar{F} \cdot \overline{FR} \cdot \overline{FRA}$	FRAME SEARCH	FRAME SEARCH	FRAME SEARCH

EXPLANATION

CONDITION \ STATE Y	
X	Z

CONDITION X AT STATE Y
PRODUCES NEW STATE Z

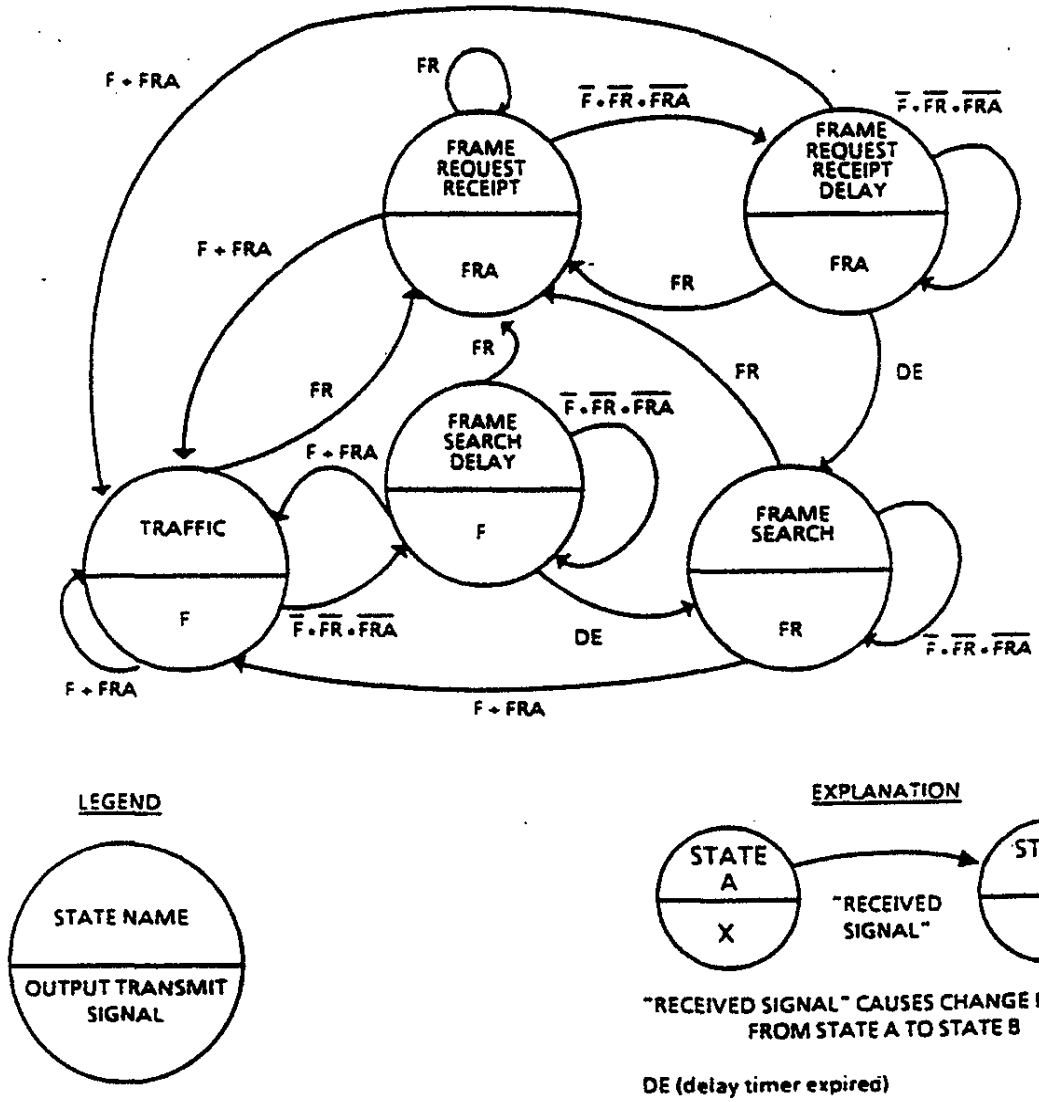


Figure 3. State Diagram - Operation with Delay (Optional)

Table 3. Traffic States and Conditions - Operation with Delay (Optional)

CONDITION (RECEIVED SIGNAL) \ STATE	TRAFFIC	FRAME SEARCH	FRAME SEARCH DELAY	FRAME REQUEST RECEIPT	FRAME REQUEST RECEIPT DELAY
F	TRAFFIC	TRAFFIC	TRAFFIC (2)	TRAFFIC	TRAFFIC (2)
FR	FRAME REQUEST RECEIPT	FRAME REQUEST RECEIPT	FRAME REQUEST RECEIPT (2)	FRAME REQUEST RECEIPT	FRAME REQUEST RECEIPT (2)
FRA	TRAFFIC	TRAFFIC	TRAFFIC (2)	TRAFFIC	TRAFFIC (2)
$\overline{F}.\overline{FR}.\overline{FRA}$	FRAME SEARCH DELAY (1)	FRAME SEARCH	FRAME SEARCH DELAY	FRAME REQUEST RECEIPT DELAY (1)	FRAME REQUEST RECEIPT DELAY
DE	———	———	FRAME SEARCH (2)	———	FRAME SEARCH (2)

NOTES:

(1) START DELAY TIMER
(2) STOP DELAY TIMER

EXPLANATION

CONDITION \ STATE Y	Z
X	

CONDITION X AT STATE Y
PRODUCES NEW STATE Z

FRAME SYNCHRONIZATION PROCEDURE

3. The DTG frame synchronization and control procedure shall be based on the principle that the received signal at each GF controls the transmitted signal to the distant GF. A GF, recognizing apparent loss of synchronization, shall initiate the Frame Request Signal. When the distant GF recognizes the FR Signal, it shall send the Frame Request Acknowledge Signal. When the initiating terminal acquires the FRA Signal, it shall terminate the FR Signal and shall revert to sending the F Signal. Upon recognition of this change from the FR to F Signal, the distant GF shall initiate the F Signal. At this point the link is frame synchronized and may carry traffic. This frame synchronization procedure obviates any requirement to search for frame patterns with data bits present, and it provides protection from false acquisitions.

OPERATION WITH DELAY (Optional)

4. The DTG function may be capable of operation with a delay prior to entering the Frame Search State as a method to overcome effects caused by error bursts encountered in a fading transmission media. In this optional case, Figure 3 (and Table 3) shall apply and the delay shall be set for a nominal 500 ms. DE (delay timer expired) is a condition that defines the end of the delay period, at which point the state logic rules of Figure 3 revert to those of Figure 2.

EVENT DESCRIPTION OF RESYNCHRONIZATION

5. Figure 4 provides a time-line description of events that occur during resynchronization between two GFs. The optional delay procedure is used in this example.

6. The following describes each event in the resynchronization cycle identified by letter in Figure 4:

Event A	(Initial Conditions) GFs A and B are exchanging the Frame Signal and monitoring the Frame Pattern in the framing channel.
Event B	(Transmission Impairment Occurs) Frame Signal time shift.
Event C	GF A recognizes loss of the Frame Signal and enters the Frame Search Delay State. In this state, the F Signal is maintained on the transmit stream, and current framing channel monitoring is continued. Internal processing is initiated prior to entering the next state, if required.
Event D	Internal processing is complete (including a timeout to provide the optional delay). GF A discontinues the F Signal, enables the FR Signal in the transmit stream, and enables the search processing for the Frame Request Acknowledge Signal, the Frame Signal, or the Frame Request Signal.
Event E	GF B, while monitoring the Frame Signal, detects the Frame Request Signal and initiates internal processing necessary to enter the Frame Request Receipt State.

Event F	Internal processing is complete. GF B discontinues the Frame Signal and enables the Frame Request Acknowledge Signal, thereby entering the Frame Request Receipt State.
Event G	GF A, since Event D, has been searching for the Frame Request Acknowledge Signal, which is to be returned as a result of Event D. Detection of this signal is complete, and internal processing is initiated prior to advancing to the next state.
Event H	Internal processing is complete, and GF A replaces the Frame Request Signal with the Frame Signal. The Traffic State is reentered.
Event I	GF B has been dwelling in the Frame Request Receipt State, monitoring the return channel for the Frame Signal. This signal is now recognized, and internal processing is initiated to reenter the Traffic State.
Event J	Internal processing is complete. GF B discontinues the Frame Request Acknowledge Signal and enables the Frame Signal. The GFs are exchanging the Frame Signal and are prepared to reinitiate signalling.

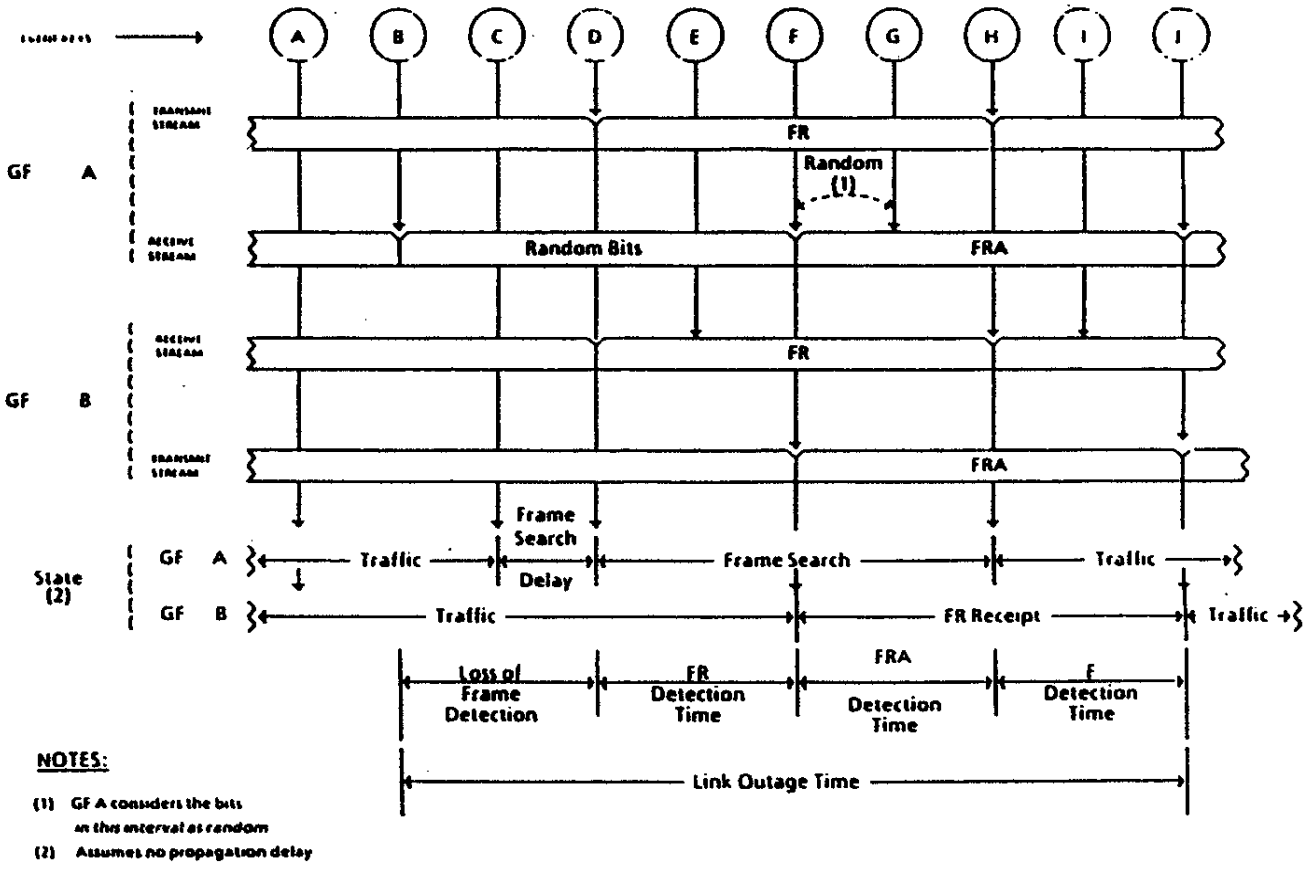


Figure 4. Resynchronization Time Line (Example Sequence)

7 The time delays associated with Figure 4 are specified in Table 4 below:

Table 4. Allocated Times [milliseconds (ms)]

TIME DELAY (ms)	256 kbit/s	512 kbit/s
(1) Loss of Frame Detection	100 ± 50	100 ± 50
(2) FR Detection Time	150	100
(2) FRA Detection Time	150	100
(2) F Detection Time	150	100

NOTES:

(1) Detection shall be achieved within these times with a probability of better than 0.9, independent of the error environment. The loss of frame detection time interval increases by the preset delay when the terminal is operating under delay rules.

(2) Detection shall be achieved within these times with a probability of better than 0.9 in a random 0.1% bit error probability environment.

CRYPTOGRAPHIC PROCEDURES

8. When LEDs are employed, cryptographic synchronization is a prerequisite for MSF frame synchronization. The following rules apply to a LED-equipped link.

a. An equipment that has lost MSF frame synchronization due to the inability to recognize the frame signal may first check the status of the LED, then:

(1) if the LED is resyncing, the equipment may initiate MSF frame search; and

(2) if the LED is not resyncing, the equipment shall initiate LED cryptographic resync and initiate MSF frame search.

b. If the status of the LED is not, or cannot be, checked, then the equipment shall proceed as in paragraph 8. a. (2) above.

c. After cryptographic resynchronization has been achieved on the link, the rules contained in Figure 2 apply.

d. If cryptographic resynchronization cannot be achieved in a reasonable time, then an appropriate alarm signal will be activated.

NATO Protocol Implementation Conformance Statement Proforma

1. Introduction

The supplier of a protocol implementation which is claimed to conform to STANAG 4207 shall complete the following NATO Protocol Implementation Conformance Statement (NPICS) proforma and accompany it with the information necessary to identify both the supplier and the implementation.

The NPICS is a document specifying the capabilities and options which have been implemented, and any features which have been omitted, so that the implement-ation can be tested for conformance against only relevant requirements.

This NPICS has several uses. The most important are the static conformance review and selection of test cases in order to identify which conformance tests are applicable to this product.

The NPICS proforma is a document, in the form of a questionnaire, normally designed by the protocol specifier or conformance test suite specifier which, when completed for an implementation or system, becomes the NPICS.

2. Abbreviations and special symbols

2.1 General

N/A	not applicable
NPICS	NATO Protocol Implementation Conformance Statement
<r>	receive
<s>	send

2.2 Option-status symbols

M	mandatory
O	optional
O.<n>	optional, but support of at least one of the group of options labelled by the same numberal <n> is required
P	prohibited
-	not applicable
<Items>:	this predicate symbol means that the status or answer following it applies only when the NPICS states that one or more of the items identified by <Items> is supported. In the simplest case, <Items> is the identifying tag of a single NPICS item; <Items> may also be a list of such tags separated by commas, or may indicate a group of related items. As an example of this last possibility, the predicate "S2ab:" is equivalent to "S2a, S2b:".
<Item>::	this group predicate symbol applies to the status of each of the items that follows, until another such group predicate occurs on a different line, or until the next horizontal rule separating groups of items.

2.3 Item references

NPICS items dealing with related functions are identified by item references sharing the same initial letter or letter-pair (in capitals). There follows a list of those initials, in the order in which the groups of items occur in the NPICS proforma.

TD	Time Division Multiplexed	FD	Frame duration
FX	Full duplex	P	Procedure
BR	DTG bit rate	C	Cryptographic procedure
S	Synchronization control procedures	M	Mode
		VR	Parameter values and ranges
LE	Link encryption device	F	Format

2.4 References

NPICS references to the STANAG have the following generic format:
<paragraph> (reference to the main STANAG part)

or

[<part>]<Annex>[<Appendix>]/<Paragraph> (all other references)

[ ]	Enclose an optional entry
< >	Denote generic identifier. Possible identifiers are: Part, Annex, Appendix, Paragraph, a number or an undercase character
Part	A capital Roman number
Annex	An uppercase character
Appendix	A number
Paragraph	<n>.[<n>] or <n>.[<x>] as appropriate
n	A number
x	An undercase character

3. Instructions for completing the NPICS proforma

The main part of the NPICS proforma is a fixed-format questionnaire. Answers to the questionnaire are to be provided in the rightmost column, either by simply marking an answer to indicate a restricted choice (such as Yes or No), or by entering a value or a set or range of values.

A supplier may also provide, or be required to provide, other information, categorized as either Exception Information or Additional Information. When present, such other information is to be provided as items labelled X<i> or A<i> respectively for cross-referencing purposes, where <i> is any unambiguous identification for the item (e.g., simply a number). There are no other restrictions on its format and presentation.

Items of Exception Information required by certain answers in the questionnaire are indicated by an "X ". This occurs when, for example, an answer indicates that a feature classified as Mandatory has not been implemented. Appropriate rationale shall be provided for all Exception items.

Items of Additional Information allow a supplier to provide additional information intended to assist interpretation of the NPICS. It is not intended or expected that a large quantity will be supplied, and a NPICS can be considered complete without any such information. Examples might be an outline of the ways in which a (single) implementation can be made to operate in a variety of environments and configurations; or a brief rationale--based perhaps on specific application needs--for the exclusion of features which, although optional, are nonetheless commonly present in implementations of this STANAG.

Items of Additional Information may also be used, where significant, to indicate that a particular "Yes" answer applies only on some occasions rather than always.

A completed NPICS proforma, including any Exception Information and/or Additional Information, is the NPICS for the implementation in question.

When completing the questionnaire, note that there are several items where two or more choices from a set of answers can apply. All relevant choices should be marked. If an optional feature is not implemented by the supplier, its subfeatures are not applicable (N/A). In this case, the supplier should circle "N/A" instead of "No"

NOTE: Where an implementation is capable of being configured in more than one way according to the items in Section 1, a single NPICS may be able to describe all configurations. However, the supplier has the choice of providing more than one NPICS, each covering some subset of the implementation's configuration capabilities, should this allow easier or clearer presentation of the information.

NPICS PROFORMA - STANAG 4207

Section 1. General Characteristics

Item	Feature	Status	Reference	Support
TD	Synchronous, time division multiplexed	M	A/1	Yes No: X
FX	Full duplex	M	A/1	Yes No: X
	DTG Bit Rate:			
BR_{256}	256 kbps	M	A/1	Yes No: X
BR_{512}	512 kbps	O	A/1	Yes No
	Mode of Operation:			
M_b	Basic	M	C/1	Yes No: X
M_d	With delay	O	C/1	Yes No
LE	LED Support	O	C/1	Yes No

Section 2. Procedures and Formats

Item	DTG Format	Status	Reference	Support	
F1a	16 time slots (0-15)	M	B/1	Yes	No: X___
F1b	1 bit per time slot	M	B/1	Yes	No: X___
F1c	Framing channel in time slot 0	M	B/1a	Yes	No: X___
F1d	Signalling channel in time slot 1	M	B/1b	Yes	No: X___
F1e	14 traffic channels in time slots 2-15	M	B/1c	Yes	No: X___
FDa	0.0625 ms frame duration	BR_{256}:M	B/2	Yes	No: X___
		BR_{512}::		N/A	
FDb	0.03125 ms frame duration	M	B/2	Yes	No: X___
F2	Each bit in signalling channel transmitted twice	M	B/5	Yes	No: X___
	Signals and Frame Patterns				
P1	Framing Patterns:	M	A/Table 1	Yes	No: X___
P2	F Signal:	M	B/3, B/6	Yes	No: X___
P3	FR Signal:	M	B/3, B/5, B/6	Yes	No: X___
P4	FRA Signal:	M	B/3, B/5, B/6	Yes	No: X___

Section 2. Procedures and Formats (Concluded)

Item	Crytographic Procedure	Status	Reference	Support
C1a	LED status monitored	LE:: 0.1	C/8	Yes N/A No
C1b	LED status not monitored	0.1	C/8	Yes No
C2a	Frame synch lost: Initiate crypto resynch if LED is not resynching	C1a:M	C/8 (a)	Yes N/A No: X___
C2b	Initiate crypto resynch and intiate MSF frame search	C1b:M	C/8 (b)	Yes N/A No: X___
C3	Crypto resynch achieved: Initiate MSF frame search	C1a:M	C/8 (c)	Yes N/A No: X___
C4	Crypto resynch not achieved: Activate alarm signal	O	C/8 (d)	Yes No
	Synchronization Procedure			
S1	Basic synchronization control procedure conforms to Figure 2 and Table 2 of this STANAG.	M_b:M	C/1 Figure 2 Table 2	Yes No: X___
S2	Synchronization control procedure (with optional delay) conforms to Figure 3 and Table 3 of this STANAG.	M_d:M	C/1 Figure 3 Table 3	Yes N/A No: X___
S3	Frame synch not achieved: Activate alarm signal	O	C/2	Yes No

Section 3. Parameter Values and Ranges

Item	Parameter	Status	Reference	Range of values supported
VR1	Time to detect loss of frame 100 ± 50 ms	M	C/Table 4	Yes No: X___
VR2	Time to detect frame pattern (F, FR, or FRA) up to 150 ms	BR_{256}:M	C/Table 4	Yes No: X___
	up to 100 ms	BR_{512}:M	C/Table 4	Yes N/A No: X___