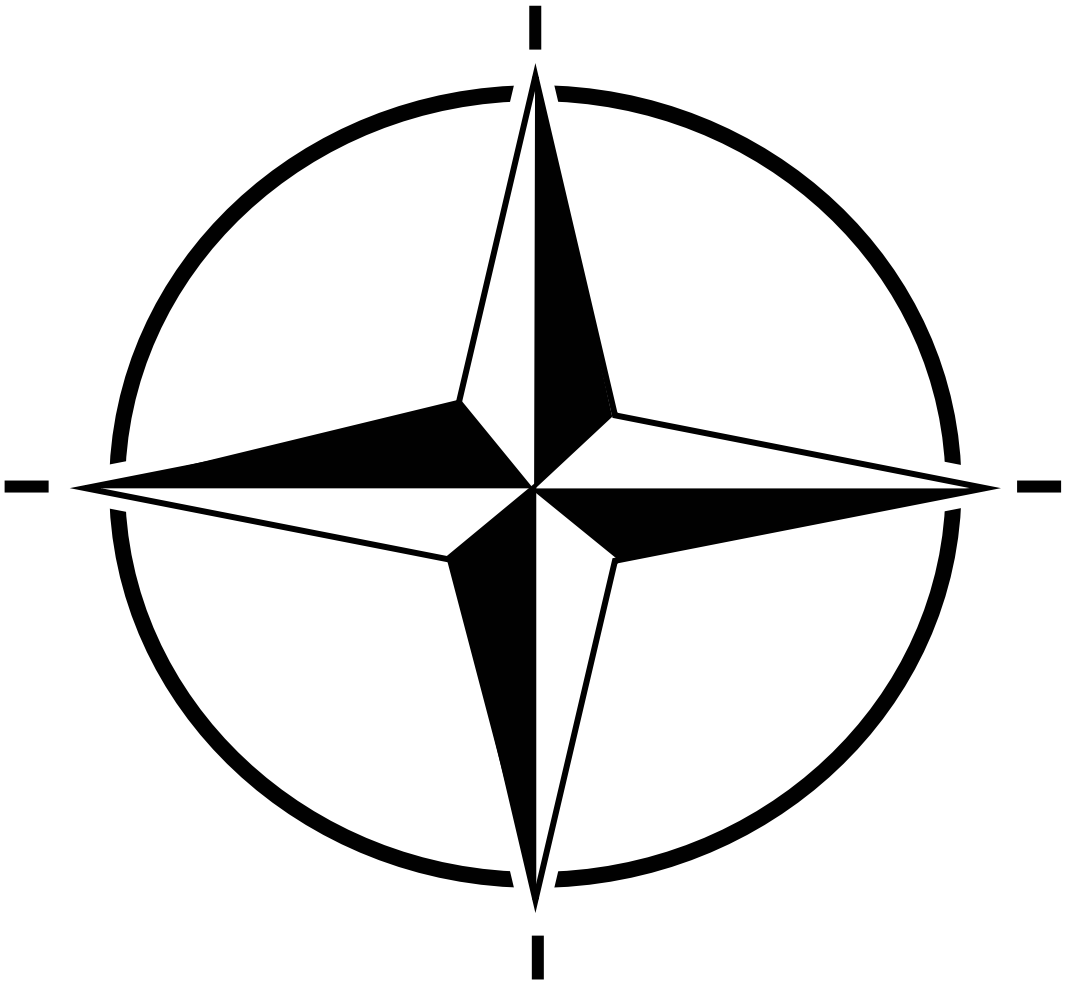

ARTILLERY PROCEDURES FOR ATOMATIC DATA PROCESSING (ADP) SYSTEM INTEROPERABILITY

AArtyP-3

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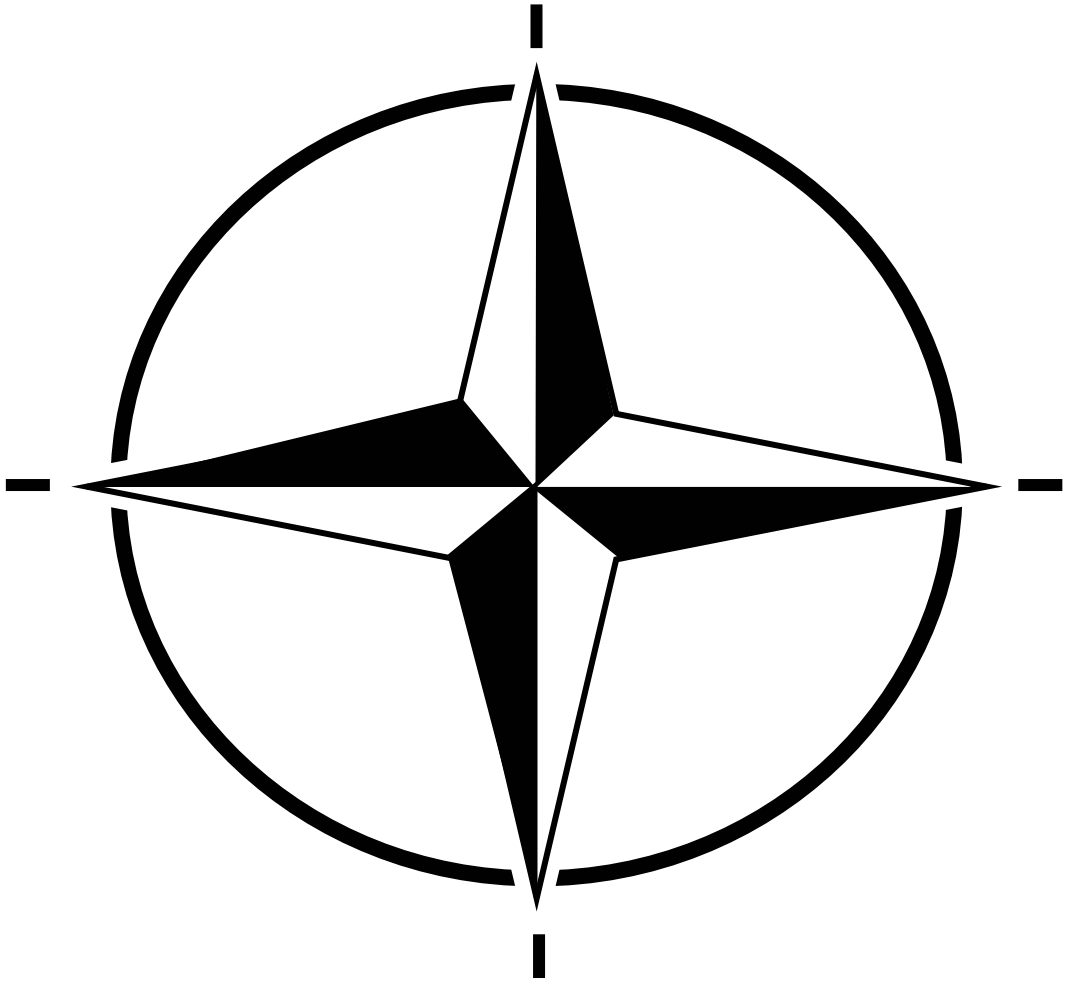

ARTILLERY PROCEDURES FOR ATOMATIC DATA PROCESSING (ADP) SYSTEM INTEROPERABILITY

AArtyP-3

DECEMBER 2009

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NORTH ATLANTIC TREATY ORGANIZATION

NATO STANDARDIZATION AGENCY (NSA)

NATO LETTER OF PROMULGATION

3 December 2009

I. AArtyP-3 ARTILLERY PROCEDURES FOR ATOMATIC DATA PROCESSING (ADP) SYSTEM INTEROPERABILITY is a NATO/PfP UNCLASSIFIED publication. The agreement of nations to use this publication is recorded in STANAG 2432.

2. AArtyP-3 is effective on receipt.

Juan A. MORENO
Vice Admiral, ESP(N)
Director, NATO Standardization Agency

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RESERVED FOR NATIONAL LETTER OF PROMULGATION

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RECORD OF RESERVATIONS

PART	RECORD OF RESERVATION BY NATIONS
2	BEL
2	DEU

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RECORD OF SPECIFIC RESERVATIONS

[nation]	[detail of reservation]
BEL	(BEL) Defense department will not implement the part one and two of AArtyP-3. Rationale: Part one and two are dedicated for FA units equipped with Automated Data Process system and (BEL) FA units do not have such an ADP. (BEL) will not use the procedure and message called "SPRT.ACA" as referenced in part two - chapter 4.10.2, 4.10.3 and 21 because this message is dealing with Air coordination but is not consistent with the applicable Air Control Usages. ACUs are the operational tools are used to physically segregate airspace and are disseminated through the Air Control Order (ACO).
DEU	Germany does not agree with paragraph 4.9.3 of AArty P-3 where WGS84 is only referred to as the "preferred date option". If different date would be used ina system network, this would constitute a serious threat to operations and to won forces, as there is no provision in hte standard on how to handle non-WGS84 reference co-ordinates. Germany does also disagree with the current statement on ADatP-3 and APP-11 within paragraphs 1.3 and 1.4 of AArty P-3. Currently AArty P-3 is not in line with htose NATO-standards.

RECORD OF CHANGES

Change Date	Date Entered	Effective Date	By Whom Entered

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1 Preface

1.1 General

Artillery formations and units from NATO and PfP nations may be called upon to operate within a multinational force in a range of operations across the spectrum of conflict. The interface described in this document allows for both the automatic transmission of formatted messages and the use of voice communications between national systems and supports all levels of conflict and operations although primarily designed for warfighting.

When the automatic interface is used, all operators will continue to complete data fields in their national languages with the exception of free text entries in messages. The interface can support all languages for free text, but English is normally used. The supported nation should define a mutually agreed language for free text messages.

When a voice interface is being used, English or French are the languages normally used. The supported nation should define a mutually agreed language for the voice interface.

1.2 Goals

The NATO Artillery Working Group IER panel is the custodian of this document – AArtyP-3. The goals of this IER panel are :

- to develop and maintain interoperability for use among the participating nations that can be deployed in a dynamic, tactical and multinational environment in accordance with NATO interoperability standards.

- to provide Artillery Commanders, within a multinational formation, the capability to integrate operations of all artillery within the formation or assigned to that formation regardless from which nation it originated.

- to provide for flexible digital and voice based interoperability, which can be changed at short notice, dependent upon the tactical situation.

In addition, the artillery operators from whichever nation should be able to support the Artillery Commander's mission without additional drills or procedures beyond that which is routinely observed and taught by his parent nation. Where procedures differ, every attempt has been made to allow for this in this document.

1.3 Purpose

This publication constitutes the operational inter-operability standard and User Formats for field artillery messages, based on agreed Information Exchange Requirements (IERs), for ADatP-3 conformant field artillery inter-operability. It is the foundation for design of system interfaces, data communication means and system standards in the fire support area. Both automated and manual/man-readable systems are covered, and it includes the actual standards that are to be used in the respective areas are indicated.

Although founded on AArtyP-1, the interfaces described In this document do not fully satisfy the voice procedures described in AArtyP-1. AArtyP-3, this document, describes the Artillery ADP interfaces and how non-ADP equipped [1]nations will interface with them. This Edition of AArtyP-3 is thus the foundation

[1] It is assumed that an ADP equipped nation will be using that system for the purposes of this document

for a more complex, comprehensive interface that will more fully reflect the procedures described in AArtyP-1, satisfying the needs of both ADP equipped and non-ADP equipped nations.

This document is divided into 3 main parts:

- **Part 1** (sections 2 to 7 inclusive) describes the Common Operational Requirement (COR).
- **Part 2** (sections 8 to 25 inclusive) describes the technical aspect of the interface and lists the detailed IERs.
- **Part 3** (sections 26 to 43 inclusive) provides the voice templates for the IERs.

This document will cover the following areas:

- Fire Missions
- Situation Monitoring, including Battlefield Geometry
- Meteorological Data Exchange for Artillery use
- Target Acquisition and Fire Planning
- Modification of Engagement Criteria
- (System messages).

1.4 Associated publications

1.4.1 This publication is founded on AArtyP-1 (STANAG 2934), chapter 14, and STANAG 5620 (Ed 1).

1.4.2 Procedural standards for ADP supported inter-operability, including the detailed message contents, are found in ADatP-3.

1.4.3 The titles of formally agreed NATO messages for Land Forces are published in APP-11.

PART 1 – COMMON OPERATIONAL REQUIREMENTS

1. Common Operational Requirements: Introduction

This part of the document, The Common Operational Requirements (COR) specifies the operational requirements for an operational interface which artillery ADP systems need to support to maximize interoperability within NATO. This interface shall be used for the co-operation of units equipped with an Artillery ADP system across a joint boundary. This interface also enables units not equipped with Artillery ADP systems to interoperate; both with ADP equipped units and those which do not have Artillery ADP systems.

1.1 Aim and Scope

1.1.1 Aim

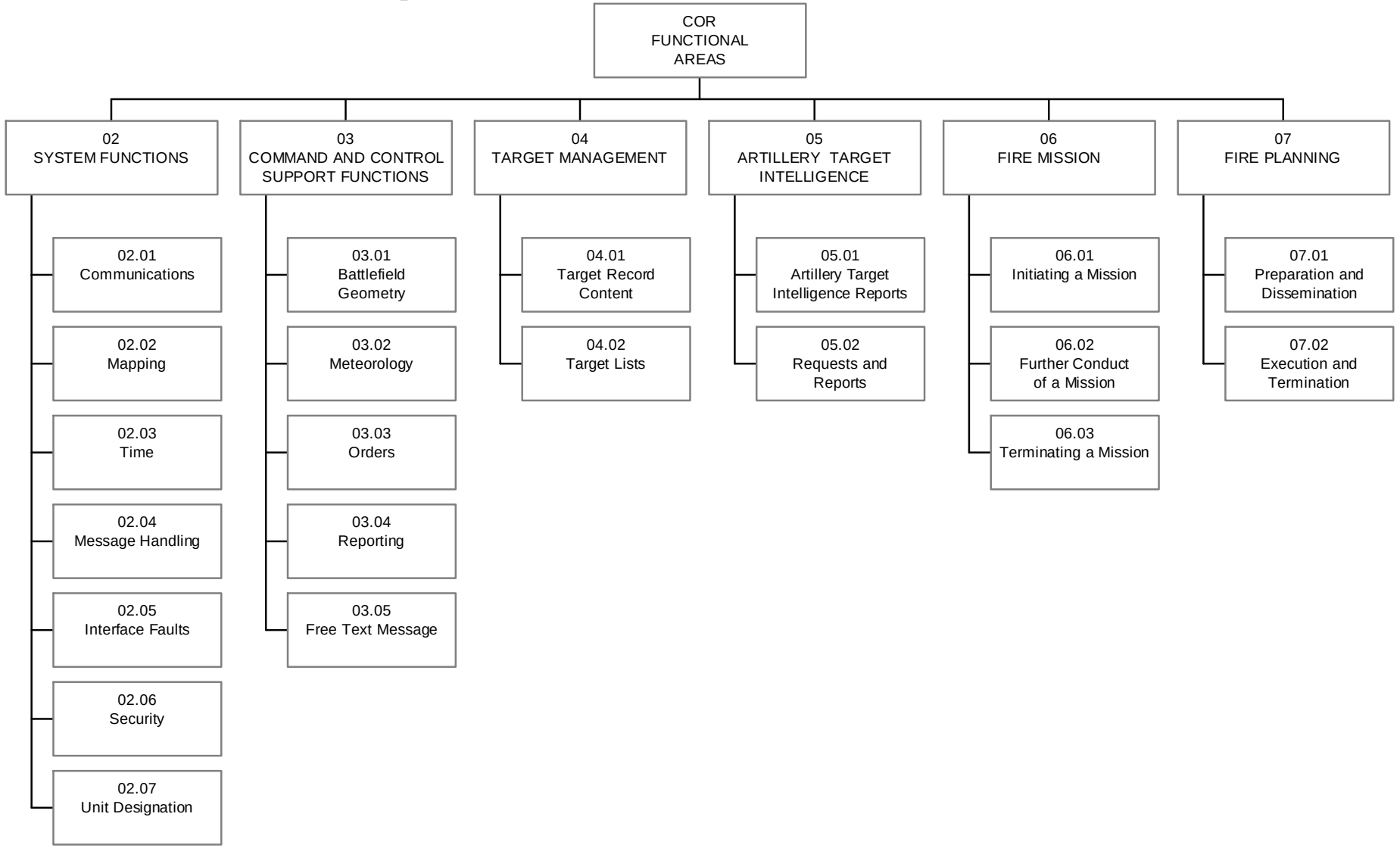
The COR identifies, defines and describes the common operational requirements to be supported and information/data to be exchanged between the systems.

1.1.2 Scope

The COR includes those requirements which, when implemented, will provide a limited capability for artillery interoperability. It does not include the full range of functional requirements which would be necessary to conduct operations across the full spectrum of conflict.

Each of the functional area requirements is located in a separate Chapter. The requirements in the individual Chapters should initially be considered as independent requirements. The relationship between requirements is illustrated in Hierarchical Diagrams. The relation between the Chapters, Levels 1 and 2 and Function ID is graphically shown in the following diagram:

1.2 Level One And Level Two Requirements



1.3 Security

The COR has been developed under the assumption that the common operational security requirement of the participating national systems shall protect exchanged information to the NATO SECRET level.

1.4 Related Documents

ATP 35 (B) Ratification Draft	Land Force Tactical Doctrine
STANAG 2934 (AArtyP-1)	Artillery Procedures
STANAG 2101	Establishing Liaison
STANAG 1001	Standardized System of Designating Days and Hours
STANAG 2014	Operation Orders, Warning Orders and Logistic Orders
STANAG 2029	Describing Ground Locations, Areas and Boundaries
STANAG 2104	Friendly Nuclear Strike Warning
STANAG 2211	Geodetic Systems, Ellipsoids, Grids, and Grid References
C-M(55)15(Final)	Security Policy of the North Atlantic Treaty Organization
	STANAG 5620 Ed 1 Standards for the Interoperability of Fire Support ADP Systems.
AAP-6	NATO Glossary of Terms and Definitions (English and French).
ALP 9	Allied Logistic Procedures

2. System Functions

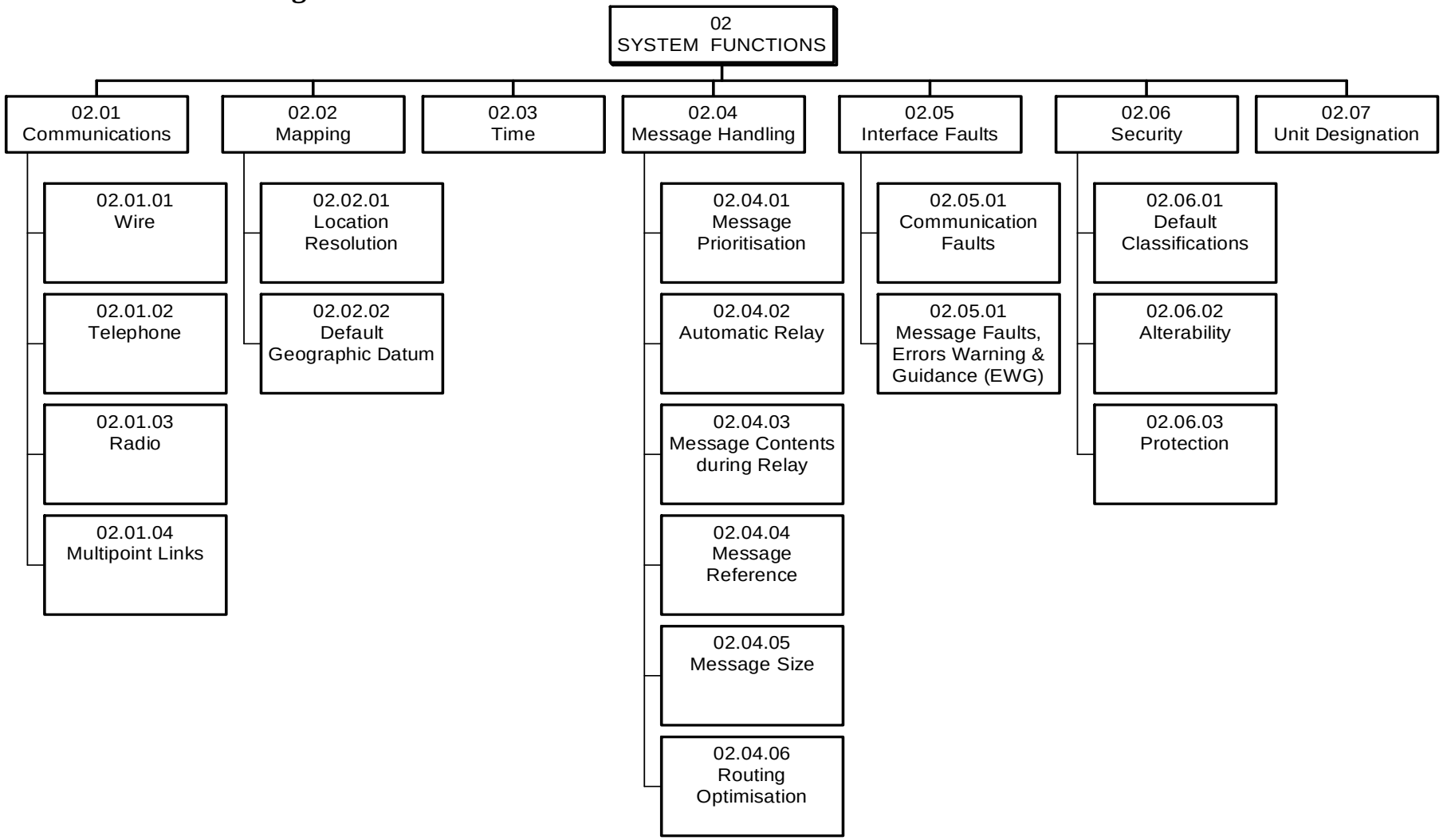
2.1 General

The aim of this chapter is to describe the requirements pertaining to interface system functions to include communications, geographic data, user guidance and time.

2.2 Operational Requirement - Interface System Functions

The interface shall provide a common set of interface system functions.

2.3 Hierarchical Diagram



FUNCTION ID	FUNCTION TITLE	DESCRIPTION	REMARKS
02	Interface System Functions	The interface shall provide a common set of interface system functions.	
02.01	Communications	The interface is to be able to communicate by various communications means .	
02.01.01	Wire	The interface must be able to communicate across a wire link.	
02.01.02	Telephone	The interface must be able to communicate across commercial and defence telephone networks.	
02.01.03	Radio	The Interface shall be capable of operating over secure radio with ECCM features.	Nations may have to share radios to make this work.
02.01.04	Multipoint links	The interface shall be capable of operating multipoint links from one cell to three other cells on wire links, combat radio, and telephone lines.	
02.02	Mapping	The interface shall support common geographic datums	
02.02.01	Location Resolution	The interface shall provide the capability to define locations world wide with a resolution of 1 meter.	
02.02.02	Default Geographic Datum	The interface shall use WGS 84 with the UTM coordinate system as the default geographic datum.	
02.03	Time	The interface shall support the use of a full date time group (DTG).	
02.04	Message Handling	The interface shall provide message handling facilities.	
02.04.01	Message Prioritisation	The interface shall allow originator to prioritise messages. The interface shall not alter the prioritisation of a message.	
02.04.02	Automatic Relay	The interface shall enable messages to be automatically relayed from the originator to the intended recipient.	
02.04.03	Message contents during Relay	The interface shall ensure that the contents of every message remain unaltered during relay.	
02.04.04	Message Reference	The interface shall identify uniquely every message for future reference.	
02.04.05	Message Size	The interface shall enable the passage of any length of message.	Limited to 50Kb
02.04.06	Routing Optimisation	The interface shall support the optimisation of message routing.	Routing by priority or by originator.
02.05	Interface Faults	The interface shall prevent and recover from faults	
02.05.01	Communications Faults	The interface shall prevent and recover from Communications faults. If a message is not acknowledged, then the interface shall support the re-establishment of communications and the re-transmission of the message.	CRC
02.05.02	Message Faults, Errors Warning and Guidance (EWG)	The interface shall support the detection and reporting of Message faults. The EWG message shall contain error conditions in detail.	
02.06	Security	The interface shall support information classification and protect the transmitted information to the same level of classification as specified by the originator. Classifications transmitted across the interface will be in accordance with NATO definitions and will contain a “NATO” label represented by an N (i.e. NU = NATO Unclassified, NR = NATO Restricted, NC = NATO Confidential, NS = NATO Secret).	
02.06.01	Default Classifications	The interface shall support the use of default classifications for messages.	
02.06.02	Alterability	The classification of a message passed across the interface shall remain unaltered once released by the originator.	
02.06.03	Protection	The interface shall protect the transmitted information in accordance with the specified classification.	In accordance with NATO Security Policy
02.07	Unit Designation	The interface shall support the use of a common designation for units.	

Table 1. Table of Operational Requirements for System Functions

3. Command and Control Support Functions

3.1 General

In principle, the interface must have the flexibility to allow for all changes in the chain of command as well as the performance of tactical tasks.

Combined operations of multinational formations require maximum coordination. Fire support coordination is to allow the maximum exploitation of available fire support assets while ensuring the safety of own troops against the effects of own fires. Therefore, all necessary coordination measures must be transmitted across the interface and supported by functions of the national artillery systems.

Artillery tactical tasks define the fire support responsibilities of an artillery unit/formation to a manoeuvre unit/formation or to another artillery unit/formation. They are defined in AArtyP-1 and are not repeated here.

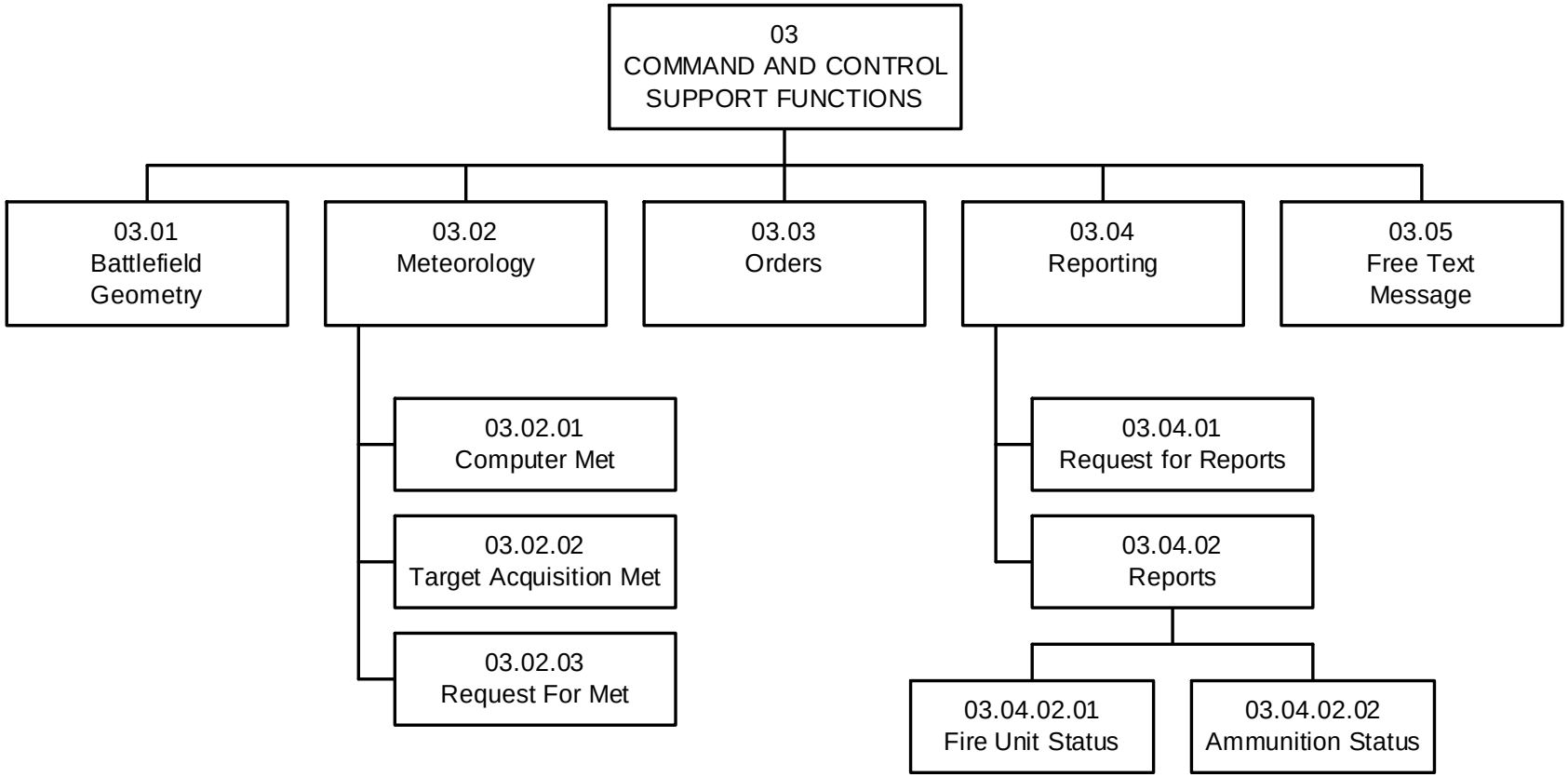
3.1.1 AIM

The aim of this chapter is to describe all requirements pertaining to command & control support functions. The requirements are described in detail needed for a successful employment of the interface: battlefield geometry, meteorology, orders, reports and returns, automated routing and multiple interface links.

3.1.2 Operational Requirement - Command & Control Support Functions

The interface shall support the Command and Control functions necessary to enable artillery support between nations regardless of mission or task assignment. The interface should be able to exchange basic information (FUS, AMMO, etc.) between systems regardless of the mission or tactical task. The commander will direct the extent of information to be exchanged.

3.2 Hierarchical Diagram



FUNCTION ID	FUNCTION TITLE	DESCRIPTION	REMARKS
03	Command and Control Support Functions	The interface shall support the Command and Control functions necessary to enable artillery support between nations regardless of mission or task assignment. The interface should be able to exchange basic information (FUS, AMMO, etc.) between systems regardless of the mission or tactical task.	
03.01	Battlefield Geometry	The interface shall allow the transmission of the following types of Battlefield Geometry in accordance with STANAG 2934 and AAP-6: FEBA, FLOT, FSCL, RFL, MA, MFLD, TAREA, ZOF, NFA, RFA, BDRY, FFA, ACA, Phase Lines (PL), Target Area of Interest (TAI), Named Area of Interest (NAI), Line of Departure (LD), Release Point (RP), Start Point (SP), Check Point (CP).	
03.02	Meteorology	The interface shall support the request for Met information and the supply of that information.	
03.02.01	Computer Met	The interface shall allow transmission of Computer Met in accordance with STANAG 4082.	
03.02.02	Target Acquisition Met	The interface shall allow transmission of Target Acquisition Met in accordance with STANAG 4140.	
03.02.03	Request for Met	The interface shall allow for the request of MET in accordance with STANAG 4103.	
03.03	Orders	The interface shall support the transmission of orders and warning orders for assignment of tactical missions and deployment of units. The interface must be able to provide sufficient information to the units being deployed to allow those units to carry out the tactical task.	
03.04	Reporting	The interface shall support the request for, and transmission of, reports.	
03.04.01	Request for Reports	The interface shall support the request for reports.	
03.04.02	Reports	The interface shall support the transmission of reports.	
03.04.02.01	Fire Unit Status	The interface shall support the transmission of artillery unit status in a single report for units from Section size up to FA Bde size.	The requirement is only supported for fire units not command and control elements.
03.04.02.02	Ammunition Status	The interface shall support the transmission of ammunition status in a single report for units from Section size up to FA Bde size.	
03.05	Free Text Message	The Interface shall support the transmission of free text messages.	

Table 2. Table of Operational Requirements for Command and Control Functions.

4. Target Management

4.1 General

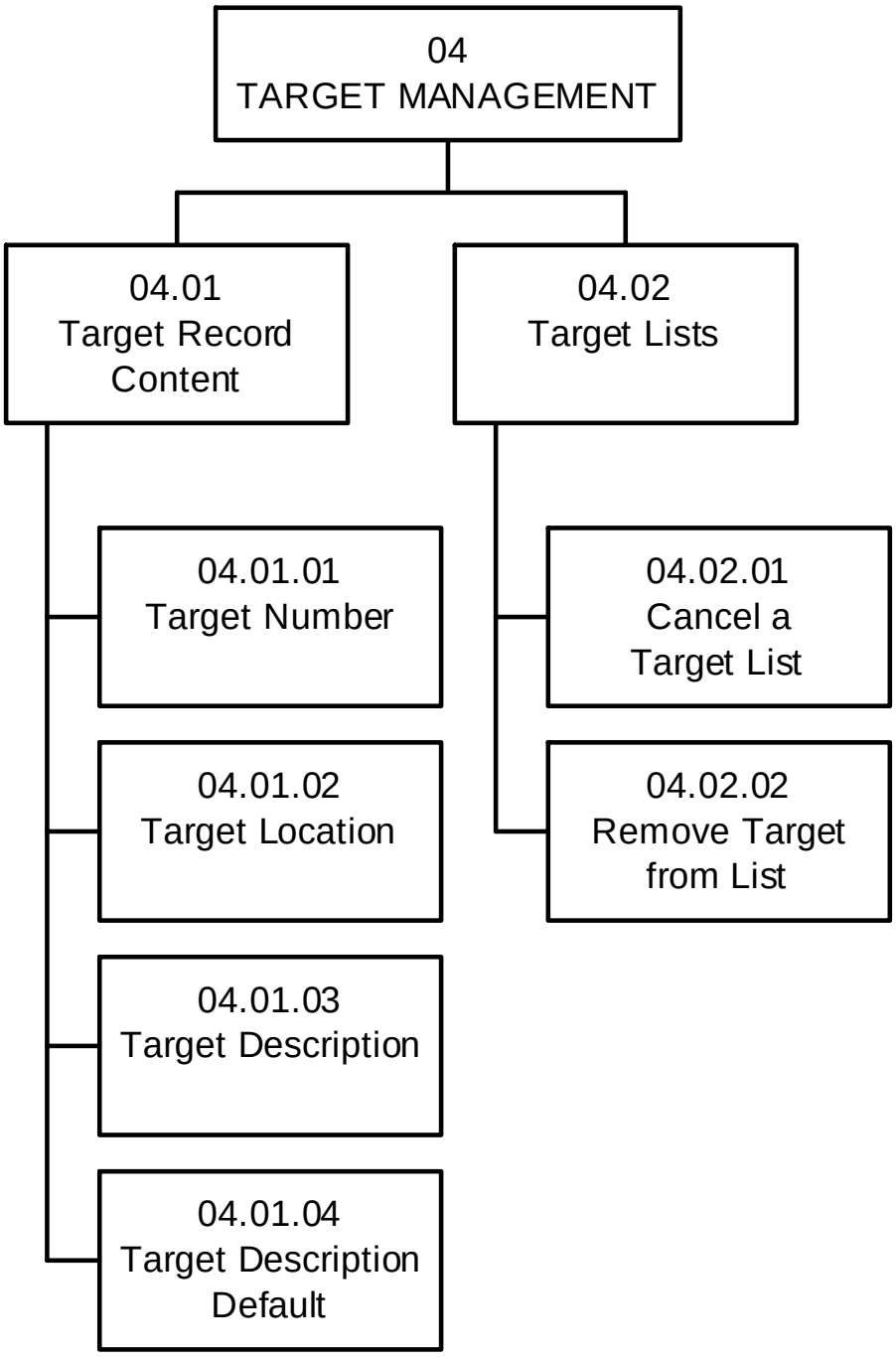
The aim of this Chapter is to state the operational requirement to administer and process a number of targets in order to make planning and fire support as efficient as possible while using latest data.

4.2 Operational Requirements for Target Management

The interface shall provide the capability to manage targets between nations across the interface. This chapter includes the requirements for Target Record Content, Target Lists, Recording of Targets, Modification to Targets.

Note: The structure of all requirements of this Chapter is graphically illustrated to 4 levels. In paragraph 4.4 all requirements are listed in detail. The sequence always corresponds to the graphical structure. The numbers and titles indicated always correspond with each other.

4.3 Hierarchical Diagram



FUNCTION ID	FUNCTION TITLE	DESCRIPTION	REMARKS
04	Target Management	The interface shall provide the capability to manage targets between nations across the interface. This section includes the requirements for Target Record Content, Target Lists, Recording of Targets, Modification to Targets	
04.01	Target Record Content	The interface shall allow the transmission of target information in a target record. The mandatory fields are Target Number, Target Location, Target Description, Target Date Time Group. Other entries may include: Surveillance Target Acquisition Means, Target Permanence, Target Status, Mission Surveillance, Remarks.	
04.01.01	Target Number	The interface shall support the NATO six-character alpha-numeric target number system (of the form AANNNN). The interface shall allow the assignment of a unique target number to be associated with a target for use in all transmissions related to that target across the interface.	
04.01.02	Target Location	The interface shall allow the location of a target to be specified in the form of a grid reference (Eastings and Northings) and an Altitude A grid reference and altitude are mandatory details.	
04.01.03	Target Description	The interface shall allow a call for fire to contain the following target description information: target type, target sub-type, degree of protection, size (area and attitude), and number of target elements.	
04.01.04	Target Description Default	The interface shall require a call for fire to contain target description information, which can include one or more of the following: target type, target sub-type, degree of protection, size (area and attitude) and number of target elements. If this information has not been specified by the originating operator, then supported (originating) nation shall provide default values prior to transmission.	
04.02	Target Lists	The interface shall allow the transmission of a list of targets across the interface. The list will carry an identifier similar to a fire plan name that can be the same as the fire plan name during fire planning. The list that is transmitted across the interface will contain no more than 99 targets. The target list will have an effective date-time group and duration. Upon expiration of the effective date-time group the national system may delete the list.	Lists are only supported in fire planning.
04.02.01	Cancel a Target List	The interface shall allow the transmission of the order to cancel a complete list.	
04.02.02	Remove Target from List	The interface shall also allow the transmission of the order to cancel targets from a list identified by their target numbers.	

Table 3. Table of Operational Requirements for Target Management

5. Artillery Target Intelligence

5.1 General

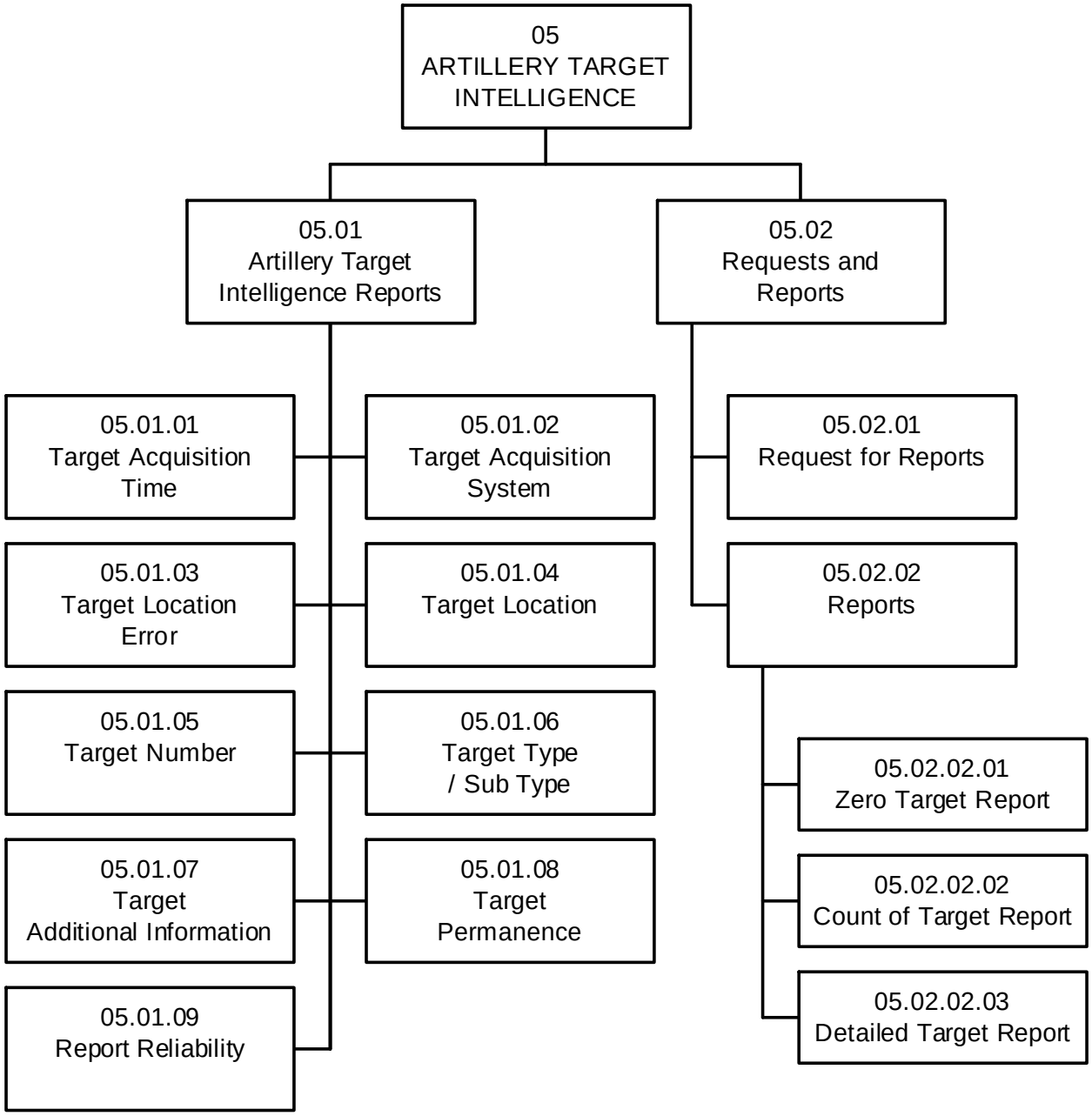
As well as fire support and fighting with indirect fire, the main mission of artillery in combined arms combat is reconnaissance, surveillance and target acquisition. They are the basis for the employment of friendly weapon systems and contribute to the determination of the situation by the commander in all operations.
In the long term an integrated reconnaissance and target acquisition system should be available providing latest data, if possible in a condensed form. In order to be properly analyzed the reconnaissance and target acquisition data must be accurate and available with a short time delay and include the target behavior. Therefore, Artillery Target Intelligence requests and reports are an important requirement of the interface.

5.2 Operational Requirements for Artillery Target Intelligence

The interface shall allow the transmission of Artillery Target Intelligence requests and reports.

Note: The structure of all requirements of this Chapter is graphically illustrated to 4 levels. In paragraph 5.4 all requirements are listed in detail. The sequence always corresponds to the graphical structure. The numbers and titles indicated always correspond with each other.

5.3 Hierarchical Diagram



FUNCTION ID	FUNCTION TITLE	DESCRIPTION	REMARKS
05	Artillery Intelligence	The interface shall allow the transmission of Artillery Target Intelligence requests and reports.	
05.01	Artillery Target Intelligence Report	The interface shall be able to transmit an artillery target intelligence report. The message can be based on a request.	
05.01.01	Target Acquisition Time	The interface shall allow the transmission of an intelligence report containing the target acquisition time.	
05.01.02	Target Acquisition System	The interface shall allow transmission of an intelligence report to contain target acquisition system or agency used.	
05.01.03	Target Location Error	The interface shall allow the transmission of a target intelligence report which contains the target location error.	TLE to be expressed as a CEP in meters.
05.01.04	Target Location	The interface shall allow the transmission of the target intelligence report to contain the location of the target described as a point or an area.	
05.01.05	Target Number	The interface shall allow the transmission of a target intelligence report to contain a target number assigned by the nation providing the report.	
05.01.06	Target Type/Subtype	The interface shall allow the transmission of the target intelligence report to contain the target type and subtype, the strength (quantity), and the degree of protection.	
05.01.07	Target Additional Information	The interface shall allow the transmission of the target intelligence report to contain additional information e.g. has the target been engaged, battle damage assessment.	
05.01.08	Target Permanence	The interface shall allow for the transmission of a target intelligence report to contain the target permanence expressed in hours and minutes.	
05.01.09	Report Reliability	The interface shall allow the transmission of the reliability of an Artillery Target Intelligence Report. Reliability can be specified as: Excellent, Good, or Fair.	
05.02	Requests and Reports	The interface shall allow the transmission of requests for target intelligence reports and responses thereto.	
05.02.01	Request for Reports	The interface shall allow the transmission of requests for target intelligence reports. Each request shall have a response containing the target(s) that meet the search criteria. The search criteria may include either the target number only, or any combination of the following: target type/or subtype, search areas, target size, target strength, time period based on date time group and fire mission indicator..	
05.02.02	Reports	The interface shall allow the transmission of reports in response to requests for target intelligence.	
05.02.02.01	Zero Target Report	The interface shall allow the transmission of a response of “No Targets meeting the search criteria” when no targets meet the search criteria of the request.	
05.02.02.02	Count of Target Report	The interface shall allow the transmission of a target intelligence reports with a count of the target(s) meeting the search criteria of the request.	
05.02.02.03	Detailed Target Report	The interface shall allow the transmission of a target intelligence reports with the full details of the target(s) meeting the search criteria of the request.	

Table 4. Table of Operational Requirements for Artillery Target Intelligence

6. Fire Mission

6.1 General

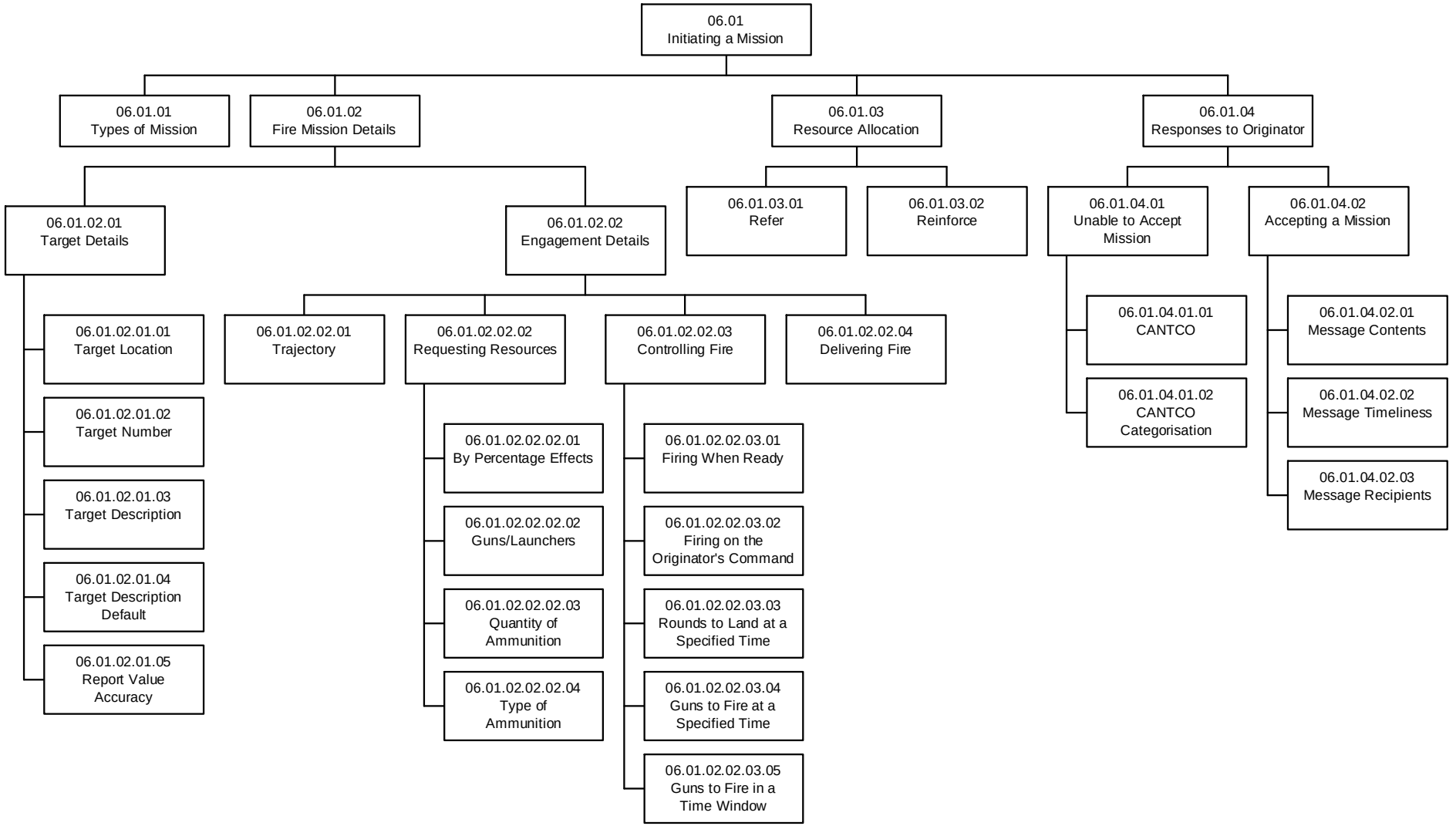
The aim of this chapter is to describe all requirements pertaining to fire missions. The requirements of the interface are described in the detail that is necessary for a successful engagement of targets. The interface shall support fire for effects missions with conventional and improved conventional munitions and mine missions. Special effects (smoke and illumination) shall not be supported by the interface.

6.2 Operational Requirement - Fire mission

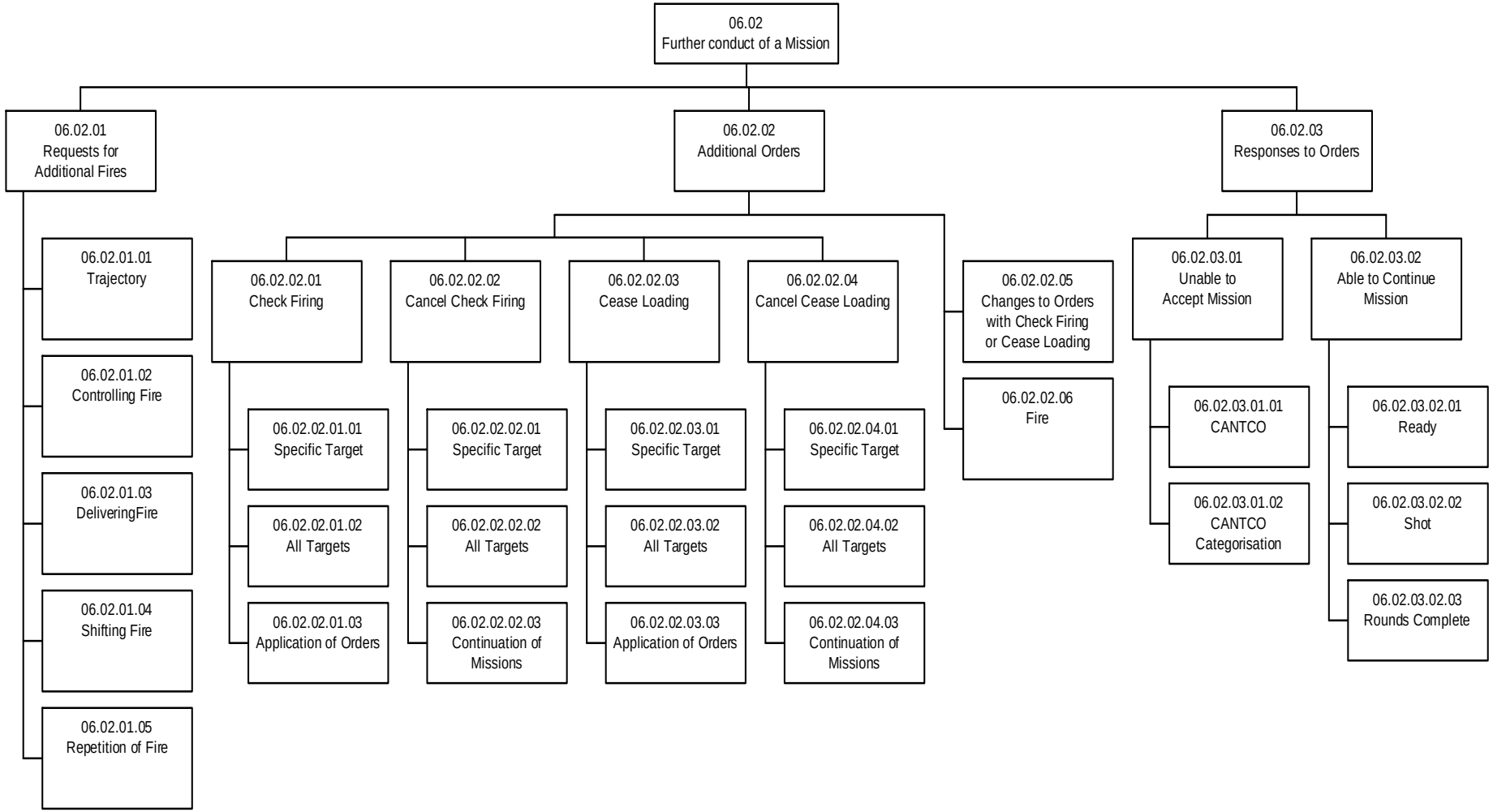
The interface shall enable the direction of fire for effect at a specified target and allow the originating nation subsequently to shift the fire for effect.

Note: In the following, the structure of all requirements is graphically illustrated to 7 levels. For reasons of clarity the structure is broken down and shown separately. Subsequently all requirements are listed in detail. The sequence corresponds to the graphical structure. The numbers and titles indicated always correspond with each other.

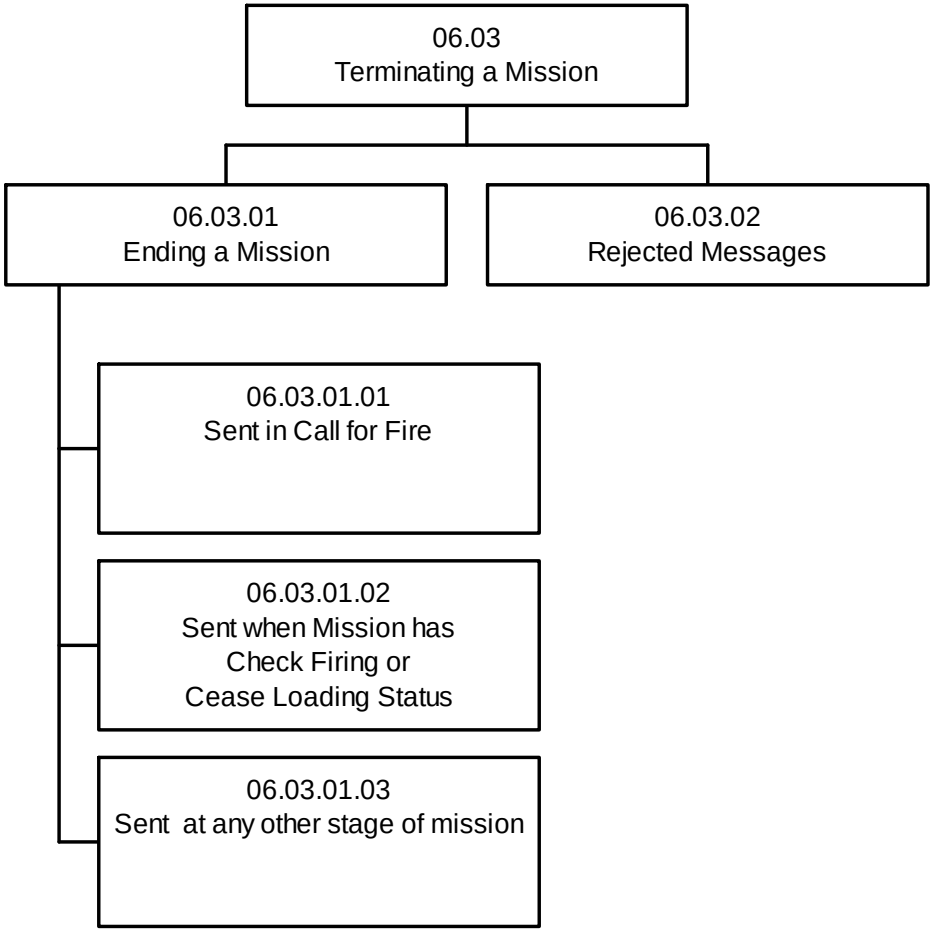
6.3 Hierarchical Diagram



Hierarchical Diagram (Continued)



Hierarchical Diagram (Continued)



FUNCTION ID	FUNCTION TITLE	DESCRIPTION	REMARKS
06	Fire Missions	The interface shall enable the direction of fire for effect at a specified target and allow the originating nation subsequently to shift the fire for effect.	See under 06.02.01.04 for definition of 'shift'.
06.01	Initiating a Mission	The interface shall transmit a request for fire containing the data necessary for obtaining the required fire on the target.	
06.01.01	Types of Mission	The interface shall support Fire for Effect missions.	
06.01.02	Fire Mission Details	The interface shall pass all details pertaining to the target, so that the required fire may be directed at the target.	
06.01.02.01	Target Details	The interface shall support the transmission of additional details pertaining to the engagement, which is to be executed.	
06.01.02.01.01	Target Location	The interface shall allow the location of a target to be specified in the form of a grid reference (Eastings and Northings). A grid reference and altitude are mandatory details.	
06.01.02.01.02	Target Number	The interface shall support the NATO six-character alphanumeric target numbering system (of the form AANNNN). All Calls for Fire across the interface shall be associated with a unique target number. The interface shall thereafter allow that target to be identified by its unique target number in connection with the further conduct of that fire mission.	
06.01.02.01.03	Target Description	The interface shall allow a call for fire to contain the following target description information: target type, target sub-type, degree of protection, size (area and attitude), and number of target elements in order to allow the 'Weight of Fire' calculations of the supporting nation to be carried out.	
06.01.02.01.04	Target Description Default	The interface shall require a call for fire to contain target description information, which can include one or more of the following: target type, target sub-type, degree of protection, size (area and attitude) and number of target elements. If this information has not been specified by the originating operator, then supported (originating) nation shall provide default values prior to transmission.	
06.01.02.01.05	Report Value Accuracy	The interface shall support the sending of report value accuracy in a Call for Fire.	
06.01.02.02	Engagement Details	The interface shall pass any details pertaining to the engagement which is to be executed.	
06.01.02.02.01	Trajectory	The interface shall allow the originator of a Call for Fire to specify either Low or High Angle trajectories. If no trajectory is specified then Low is to be the default.	
06.01.02.02.02	Requesting Resources	The interface shall allow a Call for Fire to include a request for Fire Mission resources either by way of the effect required on the target or by way of a specific number of guns coupled with a type and quantity of ammunition or a number of rockets by type.	
06.01.02.02.02.01	By Percentage Effects	The interface shall allow a Call for Fire to include a request for specific percentage effects on the target.	
06.01.02.02.02.02	Guns/Launchers	The interface shall allow a Call for Fire to specify a number of guns to be used on the Fire Mission. The number of launchers shall not be specified.	
06.01.02.02.02.03	Quantity of Ammunition	The interface shall allow a Call for Fire to specify an ammunition quantity (number of volleys/rockets) to be used on the fire mission. When a quantity of ammunition is specified, for guns this means rounds per gun; for rockets this means the total number of rockets to be fired.	
06.01.02.02.02.04	Type of Ammunition	The interface shall allow a Call for Fire to specify an ammunition type to be used on the fire mission.	
06.01.02.02.03	Controlling Fire	The interface shall recognize the five following methods of controlling the timing of fire. A Call for Fire shall have only one such method of control specified.	
06.01.02.02.03.01	Firing When Ready	The interface shall allow a Call for Fire to contain a method of controlling the fire, which	

FUNCTION ID	FUNCTION TITLE	DESCRIPTION	REMARKS
		will result in the guns or launchers firing as soon as they are ready. (FWR)	
06.01.02.02.03.02	Firing On the Originator's Command	The interface shall allow a Call for Fire to contain a method of controlling the fire so that the guns or launchers will only fire on the order of the originator. (AMC)	
06.01.02.02.03.03	Rounds to Land at a Specified Time	The interface shall allow a Call for Fire to contain a method of controlling the fire, which will result in the guns or launchers firing so that the rounds will land on the target at a specified time. Such a time will be specified to the nearest minute. (TOT)	
06.01.02.02.03.04	Guns to Fire at a Specified Time	The interface shall allow a Call for Fire to contain a method of controlling the fire, which will result in the guns or launchers firing at a specified time. The time to fire will be specified to the nearest minute. (TTF)	
06.01.02.02.03.05	Guns to Fire in a Time Window	The interface shall allow a Call for Fire to contain a method of controlling the fire, which will result in the guns or launchers firing not before the earlier time and not after the later time (i.e. a time window). Both times will be specified to the nearest minute. (RWR)	No firing before the start time of the window and no munitions to land after the finish time of the window.
06.01.02.02.04	Delivering Fire	The interface shall allow the Call for Fire to contain a time interval which will affect the delivery of the rounds.	
06.01.03	Resource Allocation	The interface shall support the following cases: the referral of a mission to other nations and the request for reinforcement of a mission by other nations.	
06.01.03.01	Refer	The interface shall enable the referral of a mission to another nation. The interface shall enable the subsequent passage of messages to pass through the intermediate nation(s) or pass directly according to the command relationship.	The Target Number shall remain the same.
06.01.03.02	Reinforce	The interface shall enable the reinforcement of a mission by another nation.	The Target Number shall remain the same.
06.01.04	Responses to Originator	The interface shall support the passage of a single message from a supporting nation to the originator in response to all Calls for Fire. In the case where another nation is reinforcing the supporting nation, only the supporting nation shall send the response.	
06.01.04.01	Unable to Accept Mission	The interface shall support the sending of a single message to the originator by a supporting nation in response to a Call for Fire (or Additional Fires) when that supporting nation is unable to respond to the Call for Fire (or Additional Fires).	
06.01.04.01.01	CANTCO	The interface shall support the sending of a "Cannot Comply" message to the originator by a supporting nation in response to a Call for Fire (or Additional Fires) when that supporting nation is unable to respond to the Call for Fire (or Additional Fires).	
06.01.04.01.02	CANTCO Categorisation	The interface shall support the transmission of the "reason" for the cannot comply message.	The message shall also include the appropriate errors, warning and guidance message(s) to advise the originating side of the interface of the reason why the supporting nation cannot comply. See Annex A for conditions under which a Command or Report will be rejected.
06.01.04.02	Accepting a Mission	The interface shall allow the single response message to the originator of the Call for Fire to contain information about the actual execution of fire that is to take place. Any changes to the originator's original Call for Fire shall also be reported.	The originator/observer requires this information in order to conduct the mission in a tactical environment.
06.01.04.02.01	Message Contents	The minimum contents of the message required by the originator are: - Target Number; number of guns and rounds per guns or rockets, Times of Flight; type and quantity of ammunition; method of controlling the fire. Any change to the originator's orders in the Call for Fire shall also be reported in this message although target number and method of control shall not be changed by the supporting nation.	
06.01.04.02.02	Message Timeliness	The response message to the originator shall be received by the originator as soon as possible after the allotment is complete and in all cases before the allocated fire units have started firing.	

FUNCTION ID	FUNCTION TITLE	DESCRIPTION	REMARKS
06.01.04.02.03	Message Recipients	The interface shall support the automatic transmission of the response so that it will be received by the originator without manual intervention.	
06.02	Further Conduct of a Mission	The interface shall enable the originator to send amendments to the original Call for Fire and additional orders to the supported nation(s), who in turn shall be able to send appropriate reports back to the originator, during the conduct of a Fire Mission.	
06.02.01	Requests for Additional Fires	If End of Mission was sent in the Call For Fire, no requests for additional fires shall be permitted. In other cases, the interface shall enable the originator to send requests for additional fires according to his requirement to develop the Fire Mission in the context of the tactical environment. This requirement does not apply for rockets.	
06.02.01.01	Trajectory	The interface shall allow the originator of a Call for Fire to send a message to change the trajectory specified in the Call for Fire to either Low or High Angle unless End of Mission was sent in the Call for Fire. This requirement does not apply for rockets.	
06.02.01.02	Controlling Fire	The interface shall allow the originator of a Call for Fire to send a message requesting additional fires which includes a change to the method of controlling fire from any one method of control to any other method of control supported by the interface, unless End of Mission was sent in the Call for Fire. Only one new method of control may be included in such a message.	
06.02.01.03	Delivering Fire	The interface shall allow the originator of a Call for Fire to send a message requesting additional fires which includes a change to an order affecting the delivery of fire (ammunition and firing interval) from any delivery order to any other delivery order supported by the interface, unless End of Mission was sent in the Call for Fire.	
06.02.01.04	Shifting Fire	The interface shall allow the originator of a Call for Fire to send a message requesting additional fires which includes a change to the grid reference which was the location of the target, unless End of Mission was sent in the Call for Fire. This requirement does not apply for rockets.	
06.02.01.05	Repetition of Fire	The interface shall allow the originator of a Call for Fire to send a message requesting additional fires which will result in the guns firing exactly the same ammunition at the same target location, unless End of Mission was specified in the Call for Fire. This requirement does not apply for rockets.	
06.02.02	Additional Orders	The interface shall allow the originator of a Call for Fire or other appropriate superior cell, to send further orders relating to the conduct of a Call for Fire.	
06.02.02.01	Check Firing	The interface shall enable the immediate suspension of firing in specific circumstances. Each Check Firing order shall remain in force until a specific corresponding order is issued to rescind it.	
06.02.02.01.01	Specific Target	The interface shall enable the immediate suspension of firing on all missions on a target identified by a specific target number.	
06.02.02.01.02	All Targets	The interface shall enable the immediate suspension of firing on all targets of the originator of the Check Firing order.	
06.02.02.01.03	Application of Orders	Each Check Firing order shall be applied to both current operations missions and fire plan missions. Each order shall be applied to both to missions that exist at the time that the order is received and to any new missions on the specified target that are ordered during the period that the Check Firing order is in force.	
06.02.02.02	Cancel Check Firing	The interface shall enable an appropriate national cell to rescind a specific order to suspend firing.	
06.02.02.02.01	Specific Target	The Interface shall enable an appropriate national cell to rescind a specific order to suspend firing on a target identified by a specific target number.	

FUNCTION ID	FUNCTION TITLE	DESCRIPTION	REMARKS
06.02.02.02.02	All Targets	The Interface shall enable an appropriate national cell to rescind a specific order to suspend firing on all targets within the manoeuvre area of responsibility of the originator of the Check Firing order.	
06.02.02.02.03	Continuation of Missions	Each mission affected by a rescinding order shall be resumed as follows (provided that no other Check Firing or Cease Loading orders applying to the target are still in force). a. For current operations missions that were being fired when execution was suspended, firing shall be resumed from the point in the current method of fire at which it had been halted (i.e., the remaining rounds are to be fired in full). b. Current operations missions in which the current method of fire had not commenced firing when execution was suspended shall be continued in accordance with their current orders. Where this is not possible, i.e., in the case of timed missions (Time on Target, Time to Fire & Time to Fire Window missions) that were due to commence firing in the period during which Check Firing and/or Cease Loading was in force, firing shall not commence until and unless new valid orders are received in accordance with 06.02.02.05 (Changes to Orders, with Check Firing or Cease Loading). c. The execution of each fire plan mission shall be continued from the point that it would have reached if firing had not been halted (i.e., the timing of the fire plan schedule will be maintained).	Where these 'standard' responses are not appropriate, the manner in which firing is to continue may be specified by changing the mission orders as described by Requirement 06.02.02.05 (Changes to Orders with Check Firing or Cease Loading). Additional control of the resumption of complete fire plans may be achieved using the functions specified by Requirements 07.02.01.04-07.
06.02.02.03	Cease Loading	The interface shall enable the immediate suspension of the loading of rounds in specific circumstances. Each Cease Loading order shall remain in force until a specific corresponding order is issued to rescind it.	
06.02.02.03.01	Specific Target	The interface shall enable the immediate suspension of the loading of rounds during the execution of missions on a target identified by a specific target number.	
06.02.02.03.02	All Targets	The interface shall enable the immediate suspension of the loading of rounds during the execution of all missions on targets of responsibility of the originator of the Cease Loading order.	
06.02.02.03.03	Application of Orders	Each Cease Loading order shall be applied to both current operations missions and fire plan missions. Each order shall be applied only to missions that exist at the time that the order is received.	
06.02.02.04	Cancel Cease Loading	The interface shall enable an appropriate national cell to rescind a specific order to suspend the loading of rounds.	
06.02.02.04.01	Specific Target	The Interface shall enable an appropriate national cell to rescind a specific order to suspend the loading of rounds during the execution of missions on a target identified by a specific target number.	
06.02.02.04.02	All Targets	The Interface shall enable an appropriate national cell to rescind a specific order to suspend the loading of rounds during the execution of all missions on targets which are the responsibility of the originator of the Check Firing order.	
06.02.02.04.03	Continuation of Missions	Each mission affected by a rescinding order shall be resumed as follows (provided that no other Check Firing or Cease Loading orders applying to the target are still in force). a. For current operations missions that were being fired when execution was suspended, firing shall be resumed from the point in the current method of fire at which it had been halted (i.e., the remaining rounds are to be fired in full). b. Current operations missions in which the current method of fire had not commenced firing when execution was suspended shall be continued in accordance with their current orders. Where this is not possible, i.e., in the case of timed missions (Time on Target, Time to Fire & Time to Fire Window missions) that were due to commence firing in the period during which Check Firing and/or Cease Loading was in force, firing shall not	Where these 'standard' responses are not appropriate, the manner in which firing is to continue may be specified by changing the mission orders as described by Requirement 06.02.02.05 (Changes to Orders with Check Firing or Cease Loading). Additional control of the resumption of complete fire plans may be achieved using the functions specified by Requirements 07.02.01.04-07.

FUNCTION ID	FUNCTION TITLE	DESCRIPTION	REMARKS
		commence until and unless new valid orders are received in accordance with 06.02.02.05 (Changes to Orders, with Check Firing or Cease Loading). c. The execution of each fire plan mission shall be continued from the point that it would have reached if firing had not been halted (i.e., the timing of the fire plan schedule will be maintained).	
06.02.02.05	Changes to Orders, with Check Firing or Cease Loading	The Interface shall enable the originating nation to change the orders for a mission that is currently subject to one or more Check Firing and/or Cease Loading orders. Changes shall be ordered to the trajectory, controlling fire, delivering fire, shifting fire, or repetition of fire. The effect shall be to cancel the original orders and replace them with the changed orders. When the Check Firing (and/or Cease Loading) order(s) that apply to the mission are subsequently rescinded, firing shall be resumed in accordance with the new orders, which shall be executed in full, irrespective of how much of the original method had previously been fired.	This capability cannot be used if EOM was sent in the original Call for Fire.
06.02.02.06	Fire	The interface shall allow the order to fire to reach the guns/launchers of the supporting nation as soon as possible without operator intervention being necessary.	
06.02.03	Responses to Originator	The interface shall support the sending of a single message from the supporting nation to the originator in response to requests for additional fires and additional orders.	
06.02.03.01	Unable to Accept Mission	The interface shall support the sending of a single message to the originator by a supporting nation in response to a Call for Fire (or Additional Fires) when that supporting nation is unable to respond to the Call for Fire (or Additional Fires).	
06.02.03.01.01	CANTCO	The interface shall support the sending of a “Cannot Comply” message to the originator by a supporting nation in response to a Call for Fire (or Additional Fires) when that supporting nation is unable to respond to the Call for Fire (or Additional Fires).	
06.02.03.01.02	CANTCO Categorisation	The interface shall support the transmission of the “reason” for the cannot comply message.	The message shall also include the appropriate errors, warning and guidance message(s) to advise the originating side of the interface of the reason why the supporting nation cannot comply.
06.02.03.02	Able to Continue Mission	The interface shall support the sending of a single message from the supporting nation to the originator in response to requests for additional fires if the supporting nation is able to continue with the mission.	
06.02.03.02.01	Ready	The interface shall allow the reports of “Ready” to reach the originator as soon as possible without operator intervention being necessary. Always send when AMC.	
06.02.03.02.02	Shot	The interface shall support the sending of a report to the originator of the Call for Fire that the firing unit(s) have commenced firing. This report that firing has commenced does not require a response. The interface must not reject reports of shot from the supporting nation. Always send shot even when EOM is specified in CFF or when EOM is coupled with subsequent order.	
06.02.03.02.03	Rounds Complete	The interface shall notify the originator of the Call for Fire that the last round ordered has been fired by a supporting nation. Always send rounds complete even when EOM is specified in CFF or when EOM is coupled with subsequent order.	
06.03	Terminating a Mission	The interfacing systems shall terminate all processes related to a fire mission when the order End of Mission is received from the originating nation of the Call for Fire.	
06.03.01	Ending a Mission	The interfacing systems shall terminate all processes related to a fire mission when an End of Mission order for that Fire Mission is received unless EOM is included in the Call For Fire.	
06.03.01.01	Sent in Call for Fire	The interfacing systems shall enable End of Mission to be sent within a Call for Fire. In	The ability to impose check firing or cease loading for

FUNCTION ID	FUNCTION TITLE	DESCRIPTION	REMARKS
		such cases, the interfacing systems shall enable the method of fire ordered in the Call for Fire to be completed.	safety reasons before rounds are fired or during the firing of rounds must be accommodated.
06.03.01.02	Sent When Mission has Check Firing or Cease Loading Status	The Interface shall enable an appropriate national cell to order the termination of a currently Check Fired or Ceased Loaded mission on a specific target. The order shall take effect immediately and no further rounds shall be fired on the target	
06.03.01.03	Sent at any Other Stage of Mission	When End of Mission is sent at any stage after the Call For Fire message has been received, the interface shall terminate all processes related to that fire mission according to national doctrine.	See Check Firing 06.02.02.01.
06.03.02	Rejected Messages	Once a Mission has been accepted the interfacing systems shall only terminate a mission upon the command to end the mission received from the originator or originating nation of the Call for Fire or appropriate authority. The rejection of any message during the fire mission shall not cause a fire mission to be terminated.	But see FRs 06.03.01.01 - 03 for End of Mission details.

Table 5. Table of Operational Requirements for Fire Missions

7. Fire Planning

7.1 General

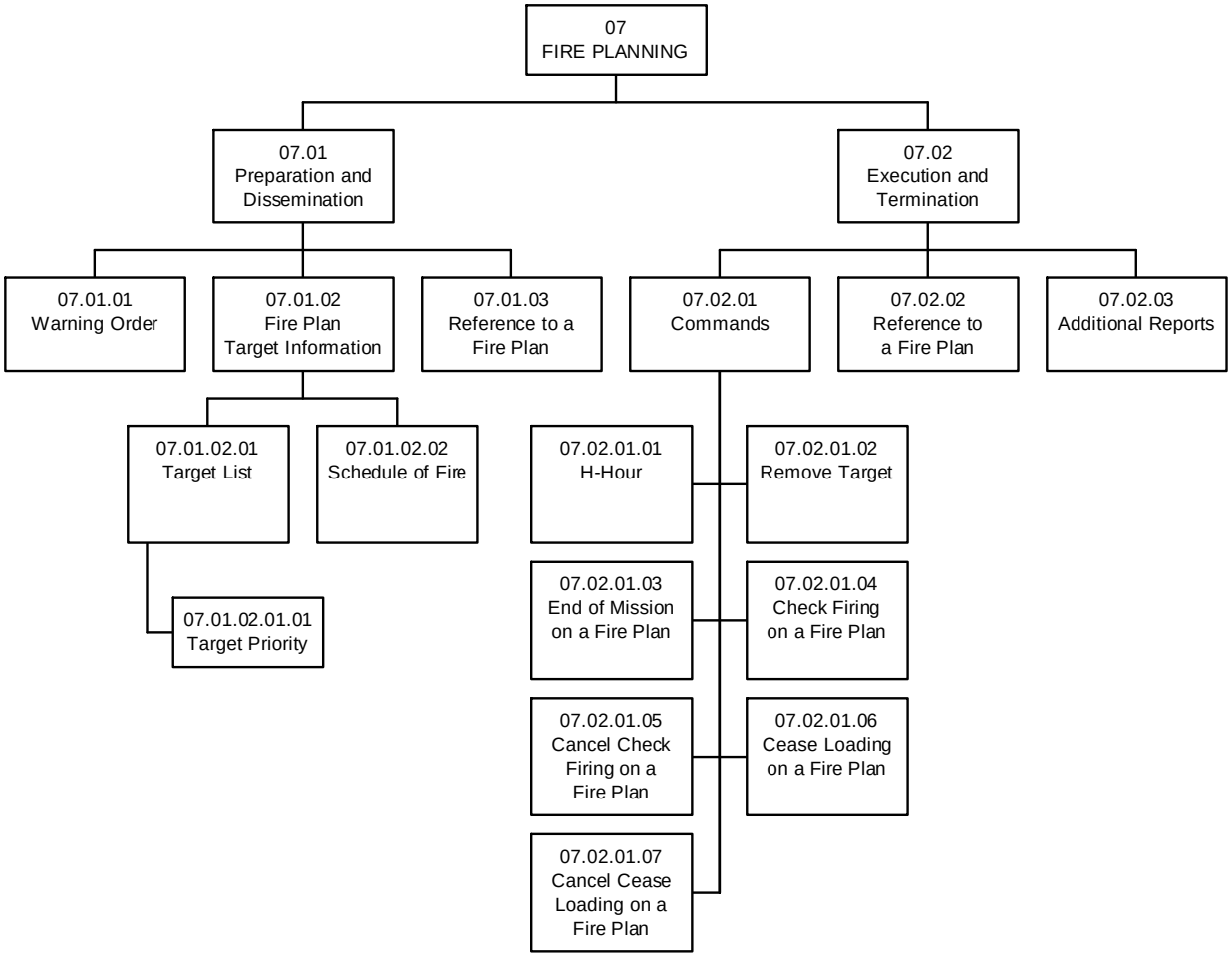
The aim of fire planning is to produce a tactical plan for the use of weapons of a unit or formation so that their fire will be coordinated - planned fire missions will have a higher level of priority than fire missions of opportunity.

7.2 Operational Requirement for Fire Planning

The interface shall enable the transmission of the information and orders required for the preparation, the dissemination, the execution and the termination of the fire plan. All messages pertaining to a fire plan shall contain the fire plan code name.

Note: In the following, the structure of all requirements is graphically illustrated to 4 levels. Following that all requirements are listed in detail. The sequence corresponds to the graphical structure. The numbers and titles indicated always correspond with each other.

7.3 Hierarchical Diagram



FUNCTION ID	FUNCTION TITLE	DESCRIPTION	REMARKS
07	Fire Planning	The interface shall enable the transmission of the information and orders required for the preparation, the dissemination, the execution and the termination of the fire plan. All messages pertaining to a fire plan shall contain the fire plan code name.	
07.01	Preparation and Dissemination	The interface shall enable the transmission of information required for fire plan preparation and dissemination : warning order, target lists with target priorities, fire unit reservation and request for modification.	
07.01.01	Warning Order	The interface shall enable the transmission of warning information pertaining to the fire plan. Fire plan warning order has to include the fire plan unique identifier (fire plan code name), and may include its estimated time window, an estimation of H hour, an estimation of center of sector and an estimation of ammunition types, quantities and number of guns / launchers.	The time window specifies the estimated day, start time and stop time. Centre of sector is specified as a grid reference and identifies the centre of the target area referred to in the fire plan.
07.01.02	Fire Plan Target Information	The interface shall support the transmission of Fire Plan Target information.	
07.01.02.01	Target List	The interface shall enable the transmission of target lists for a fire plan (see requirement 04.02 in target management). Targets within these lists may be prioritised. The interface shall also enable the transmission of the schedule of fire for the fire plan.	The involved target lists (FPL for preparation and TIS for dissemination) are the ones that are described in target management; they include in particular TNO and group references.
07.01.02.01.01	Target Priority	The interface shall support the transmission of a priority being given to each target on the target lists. There shall be 4 priority levels (1 being the highest).	
07.01.02.02	Schedule of Fire	The interface shall support the transmission of a schedule pertaining to the fire plan. The schedule shall contain for each target : target number, fire unit identification, start time and end time relative to H hour, percentage effect or type and amount of ammunition. However, when percentage effects are specified, only a start time may be specified.	
07.01.03	Reference to a Fire Plan	The interface shall enable the transmission of a reference to a fire plan code name in messages pertaining to fire coordination measures, ammunition and fire unit status.	
07.02	Execution and Termination	The interface shall enable the transmission of information and orders for monitoring and controlling fire plan execution.	
07.02.01	Commands	The interface shall enable the transmission of the orders to specify H hour, to remove a target and to end the mission of the fire plan.	
07.02.01.01	H-Hour	The interface and the interfacing systems shall support the establishment and amendment of the H-hour.	
07.02.01.02	Remove Target	The interface shall enable the transmission of a message to remove a target from a fire plan schedule.	
07.02.01.03	End of Mission on a Fire Plan	The interface shall enable the transmission of the order to stop the execution of a fire plan immediately.	The targets that have not been addressed will never be fired within this fire plan.
07.02.01.04	Check Firing on a Fire Plan	The interface shall enable the immediate suspension of fire on all missions in a fire plan. Each Check Firing order shall remain in force until a specific corresponding order is issued to rescind it.	Check Firing on individual targets in a fire plan may be ordered in accordance with Requirement 06.02.02.01.01.
07.02.01.05	Cancel Check Firing on a Fire Plan	The Interface shall enable an appropriate national cell to rescind a specific order to suspend firing on all missions in a fire plan. Fire plan execution is to be resumed from the point in the plan that would have been reached if firing had not been halted.	
07.02.01.06	Cease Loading on a Fire Plan	The interface shall enable the immediate suspension of the loading of rounds during the execution of all missions in a fire plan. Each Cease Loading order shall remain in force until a specific corresponding order is issued to rescind it.	Cease Loading on individual targets in a fire plan may be ordered in accordance with Requirement 06.02.02.03.01.
07.02.01.07	Cancel Cease Loading on a Fire Plan	The Interface shall enable an appropriate national cell to rescind a specific order to suspend the loading of rounds during the execution of all missions in a fire plan. Fire	

FUNCTION ID	FUNCTION TITLE	DESCRIPTION	REMARKS
		plan execution is to be resumed from the point in the plan that would have been reached if firing had not been halted.	
07.02.02	Reference to a Fire Plan	The interface shall enable the transmission of a fire plan code name in the following commands : check fire, cancel check fire, cease loading, cancel cease loading. These commands apply to all the targets of the fire plan. Reference to a specific TNO, included in the fire plan list, without any fire plan reference is possible (see COR fire missions). In such a case these orders only apply to that target.	
07.02.03	Additional Reports	The interface shall allow the supporting nation to send to the originator the report of "round complete" for each target in the fire plan.	See COR fire missions.

Table 6. Table of Operational Requirements for Fire Planning

Annex A to Part 1

Rejection of a Command or Report

This table identifies those conditions under which a received command or report, that does not meet the conditions described, shall be rejected.

Serial	Reason	Message Type	Case	Response	Corrective measures
1	Fire Mission is already active	Call for fire		Report – cannot comply	Send subsequent correction instead
2	Fire Mission not active	Message to observer		Error Message	None
		Command		Report – cannot comply	
		Command	Fire	Error Message	
		Command	Check fire	Error Message	
		Command	Cancel check fire	Report – cannot comply	
		Command	Cancel cease loading	Report – cannot comply	
		Command	Ready	Error Message	
		Command	Complete	Error Message	
		Command	Execution complete	Error Message	
		Subsequent correction	Method of control	Report – cannot comply	
		Subsequent correction	End of Mission only	Error Message	
3	Fire Plan not active	Command	Check fire	Error Message	None
		Command	Cease loading	Error Message	
		Command	Cancel check fire	Report – cannot comply	
		Command	Cancel cease loading	Report – cannot comply	
4	Units not available	Call for fire		Report – cannot comply	None
		Command	Fire	Report – cannot comply	
		Command	Cease loading	Report – cannot comply	
		Command	Cancel cease loading	Report – cannot comply	
		Subsequent correction	Method of control	Report – cannot comply	
5	No ammunition	Call for fire		Report – cannot comply	None
		Command	Fire	Report – cannot comply	
		Command	Cease loading	Report – cannot comply	
		Command	Cancel cease loading	Report – cannot comply	
		Subsequent correction	Method of control	Report – cannot comply	
6	Units out of range	Call for fire		Report – cannot comply	None
		Subsequent correction	Method of control	Report – cannot comply	
7	Insufficient time	Call for fire		Report – cannot comply	Amend mission timing or cancel the mission
		Subsequent correction		Report – cannot comply	
8	Mission not at my command	Command	Fire	Report – cannot comply	None
		Report	Ready	Error Message	
9	Check Fire / Cease Loading still in force	Call for fire		Report – cannot comply	Await cancellation then repeat message
		Call for fire	Fire	Report – cannot comply	
		Subsequent correction	Method of control	Report – cannot comply	
10	Check Fire / Cease Loading not in force	Command	Cancel check fire	Report – cannot comply	None or send correct check fire / cease loading
		Command	Cancel cease loading	Report – cannot comply	
11	Operator Denied	Any	Any	Report – cannot comply	LO to generate free text or voice message giving details
12	Non-specific	Any	Any	Report – cannot comply	LO to generate free text or voice message giving details

PART 2 - TECHNICAL REQUIREMENTS

1. Technical Requirements: Introduction

1.1 Purpose

The purpose of the following part of the document is to create a common technical specification for implementation of the interfaces between artillery C4I systems to satisfy the operational information exchange requirements. These C4I systems carry out automatic data processing and thus have significant extra requirements over those provided for by existing protocols; this document addresses these issues.

1.2 Objective

The objective of providing interfaces between these C4I systems is to permit the utilization of automated exchanges of data to enable participating nations artillery units to provide fire support.

1.3 Maintenance

The maintenance of this document is the responsibility of the Arty WG IER Panel.

1.4 Interface Configuration

The systems involved in these interfaces can be interconnected in various configurations dependent upon the tactical situation. Nothing in this document is intended to dictate the design of equipment or the methods in which systems perform their internal functions. The intent of this document is to specify the interface characteristics, define the methods of exchanging information, and details the information to be exchanged.

1.5 Interface Descriptions

The interfaces will provide for the appropriate exchange of both secure and clear text automated data between systems in or near real-time. The interfacing artillery C4I systems will be able to continuously exchange artillery target information, calls for fire for current and planned operations, information on friendly artillery units, and other necessary information in order to facilitate the two primary functional areas of fire mission processing and fire planning.

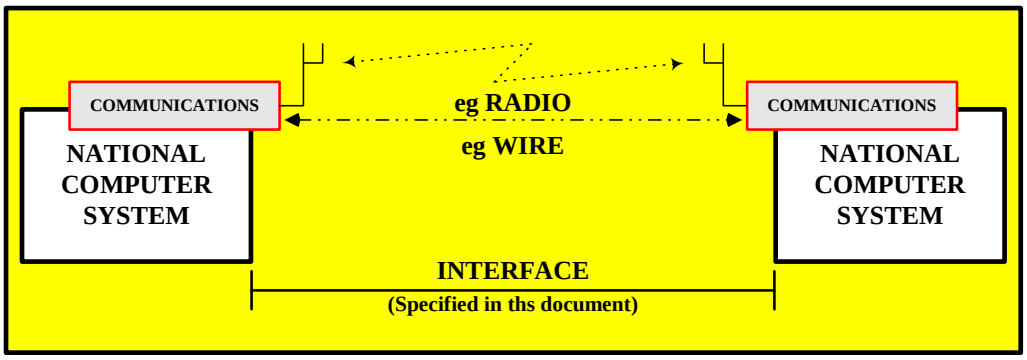


Figure 1. Interface Description

The interface described in this document defines the software solution, it does not concern itself with the associated hardware or communications means.

2. Technical Standards

2.1 General

The protocol for data exchange is based on NATO standards. The relevant detail is extracted in this section which describes the characteristics of the interfaces between the artillery C4I systems. Interoperability will be accomplished by the exchange of messages which have explicitly defined meanings rendering the messages suitable for the application of ADP techniques.

2.2 Character Coding

The convention used to code the characters is the NATO 7-bit code as defined in STANAG 5036, Parameters and Practices for the Use of the NATO 7-Bit Code. Only certain characters are defined for use within the scope of this document and are shown in Table 7. Subset of the NATO 7 Bit Code. National ADP systems are responsible for ensuring that only these characters are transmitted across the interfaces.

DEC.	CHAR.	DEC.	CHAR.	DEC.	CHAR.	DEC.	CHAR.
0	NUL	32	SPACE	64	@	96	`
1	SOH	33	!	65	A	97	a
2	STX	34	“	66	B	98	b
3	ETX	35	#	67	C	99	c
4	EOT	36	$ or £	68	D	100	d
5	ENQ	37	%	69	E	101	e
6	ACK	38	&	70	F	102	f
7	BELL	39	‘	71	G	103	g
8	BS	40	(	72	H	104	h
9	HT	41	)	73	I	105	i
10	LF	42	*	74	J	106	j
11	VT	43	+	75	K	107	k
12	FF	44	,	76	L	108	l
13	CR	45	-	77	M	109	m
14	SO	46	.	78	N	110	n
15	SI	47	/	79	O	111	o
16	DLE	48	0	80	P	112	p
17	DC1	49	1	81	Q	113	q
18	DC2	50	2	82	R	114	r
19	DC3	51	3	83	S	115	s
20	DC4	52	4	84	T	116	t
21	NAK	53	5	85	U	117	u
22	SYN	54	6	86	V	118	v
23	ETB	55	7	87	W	119	w
24	CAN	56	8	88	X	120	x
25	EM	57	9	89	Y	121	y
26	SUB	58	:	90	Z	122	z
27	ESC	59	;	91	[	123	{
28	FS	60	<	92	\	124	|
29	GS	61	=	93	]	125	}
30	RS	62	>	94	^	126	~
31	US	63	?	95	_ or ¯	127	DEL

Table 7. Subset of the NATO 7 Bit Code

2.3 Message Types

The two types of messages that are provided for the exchange of fire support data and control of the interfaces are the Exploitation Message (MEX) and the Service Message (MSV).

2.3.1 Exploitation Message (MEX)

The MEX is used to exchange fire support ADP messages. The MEX consists of a Header, MEX Control Data, and Main Text, in addition to the Preamble and Trailer as shown in Figure 2. Exploitation Message (MEX)

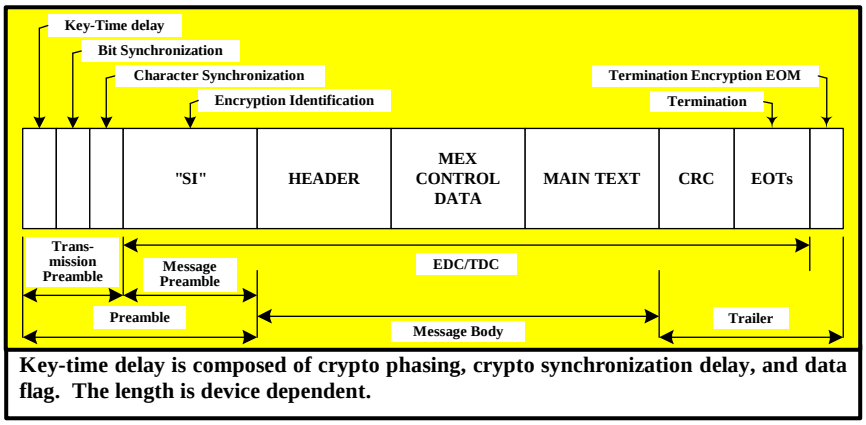


Figure 2. Exploitation Message (MEX)

2.3.2 Service Message (MSV)

The MSV is used to establish the communications link, terminate the communications link, verify that the communications link is open, and acknowledge the receipt of messages using the MEX. The MSV has no Main Text or MEX Control Data. The only information element of the MSV is the Header, as shown in Figure 3 (Service Message (MSV).

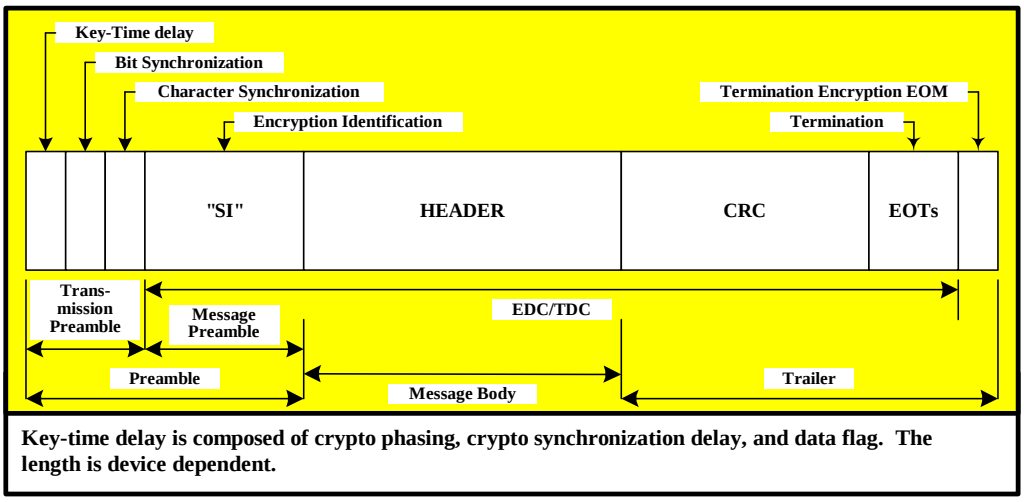


Figure 3. Service Message (MSV)

2.4 Message Header

2.4.1 Structure

The structure of the message header is shown in Figure 4, Message Header. The message header is common to all messages for transmission and forms the beginning of both the MSV and MEX messages. The Header shall immediately precede either the MEX Control Data in a MEX or the Trailer in the MSV. In the MEX, the header is separated from the MEX Control Data by a semicolon (;).

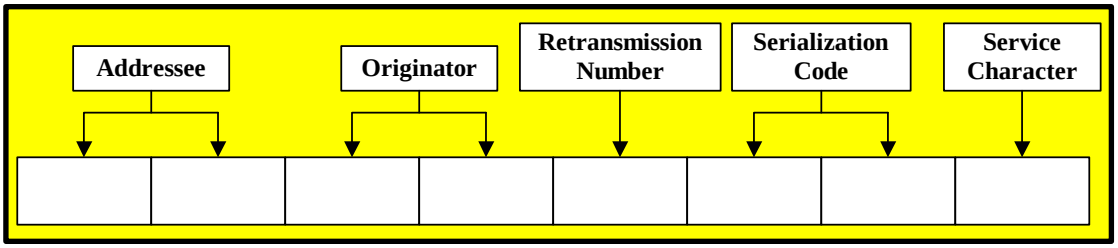


Figure 4. Message Header

2.4.2 Header Content

The message Header shall consist of eight (8) characters, as shown in Table 8 , Message Header Content, and defined in paragraphs 0, to 2.4.2.5 inclusive.

ENTRY NAME	ENTRY LENGTH	MAP
Addressee	2X	XX
Originator	2X	XX
Transmission Repeat Number	1N	N
Serialization Code	2N	NN
Service Character	1X	X

Table 8. Message Header Content

Message Addressee

Two (2) alphanumeric characters used to specify the communications address of the intended recipient of the message. With the exception of intersystem relay, these two characters will always address the same system as that identified in the MEX Control Data (see paragraph 2.5). In the case of intersystem relay, the system identified by the addressee field in the message header shall be the system responsible for the relay of the message, while the MEX Control Data destination address is the final end-to-end recipient of the message. Entries for this field will be contained in the CEOI. Legal entries:

Digits: 0 to 9
Letters: A to Z.

Message Originator

Two (2) alphanumeric characters used to specify the communications address of the message originator. With the exception of intersystem relay, these two characters will always be the same address as that system identified with the logical address of the message originator in Field 2 of the Message Identification. In the case of intersystem relay, the system identified by the Originator field in the message Header shall be the system responsible for the relay of the message, while the entry in Field 2 of the Message Identification is the actual originator of the message. Legal entries:

Digits: 0 to 9
Letters: A to Z.

NOTE: See Paragraph 2.13 for the description

Transmission Repeat Number (TRN)

One (1) digit used to specify the number of transmissions of a message. The TRN shall be the character zero (0) for the first transmission of a message and shall be incremented by one (1) for each subsequent transmission of the same message up to a maximum of four (4) transmissions. If the message is not acknowledged after the fourth transmission, then the message will not be automatically retransmitted and will require operator action. Legal entries:

0 to 3.

Serialization
Two (2) digits used to specify the serialization code used to verify the authenticity of the message and to provide each message with a sequential serial number for registration purposes. The initial value of this field is determined by mutual agreement, and shall be incremented by one (1) for each message transmission (retransmission) until the value of the serialization is 99, from which the next value shall be 00. Legal entries:

00 to 99.

Service Characters
One (1) alphanumeric character used to specify the interface management action required for a MSV message, or to identify a MEX message. Reference Table 9 (Service Characters), for MEX and MSV service characters. Reference Table 7 (Subset of the NATO 7 Bit Code), for the service character codes.

MEX SERVICE CHARACTERS	MSV SERVICE CHARACTERS	PROCESSING CATEGORY
	ACK	Positive Acknowledgment
	DC1	Interface Termination
DC3		Check Fire
DC4		Fire Mission
	ENQ	Interface Establishment
	NAK	Negative Acknowledgment
STX		Other MEX Messages
	V	Interface Verification

Table 9. Service Characters

2.4.2.1.1 MSV ACK - Positive Acknowledgment

The MSV ACK shall be used for positive acknowledgment. It shall be transmitted if the following criteria are met:

a. The first two characters of the Header are the address of the receiving station.
b. The third and fourth characters of the Header are the address of a known station authorized to transmit to the receiving station.
c. Serialization is correct, see Table 10. ACK/NAK Decision Based On Serialization.
d. The message did not contain uncorrectable bit errors.
e. The Cyclic Redundancy Code (CRC) was validated.
f. The message ended with a minimum of four EOTs (End Of Text).

2.4.2.1.2 MSV NAK Negative Acknowledgment

The MSV NAK shall be transmitted in response to a received message if a serialization error is detected, see **Table 10. ACK/NAK Decision Based On Serialization**.

2.4.2.1.3 MSV ENQ - Interface Establishment

Used as a request to establish the interface.

2.4.2.1.4 MSV V - Interface Verification

Used as an inquiry to verify the status of the interface.

2.4.2.1.5 MSV DC1 - Interface Termination

Used as a request to terminate the interface.

2.4.2.1.6 MEX DC3 – Check Fire

MEX requires immediate check fire action.

2.4.2.1.7 MEX DC4 - Fire Mission

MEX requires fire mission processing.

2.4.2.1.8 MEX STX – Other MEX

MEX requires processing other than check fire or fire mission processing..

EXPECTED VALUE (e.g.)	TRY NUMBER	RECEIVED VALUE (e.g.)	RESPONSE	ACTION
$X_{(36)}$	0	$X_{(36)}$	ACK	Process message. Set expected value to X+1 (e.g. 37)
$X_{(36)}$	1, 2, or 3	$X_{(36)}$	ACK	Process message.* Set expected value to X+1 (e.g. 37)
$X_{(36)}$	1	$X+1_{(37)}$	ACK	Process message. Set expected value to X+2 (e.g. 38)
$X_{(36)}$	2 or 3	$X+1_{(37)}$	NAK	Process message.** Set expected value to X+1 (e.g. 37)
$X_{(36)}$	2	$X+2_{(38)}$	ACK	Process message. Set expected value to X+3 (e.g. 39)
$X_{(36)}$	3	$X+2_{(38)}$	NAK	Process message.** Set expected value to X+1 (e.g. 37)
$X_{(36)}$	3	$X+3_{(39)}$	ACK	Process message. Set expected value to X+4 (e.g. 40)
$X_{(36)}$	All Other		NAK	Process message.** Set expected value to X+1 (e.g. 37)

NOTES

1. In the SERIALIZATION Table X, X+1, X+2, X+3, X+4, etc. (Examples 36, 37, 38, 39, 40, etc.) is the sequence of Serial Numbers.
2. * These combinations occur only when a duplicate message text is received. This is caused by the failure of the originating station to receive one or more of the ACK messages after the previous transmission of the message.
3. ** Operator action is required to resynchronize the serialization values. The system with the lower values shall always increment to the higher value because no value may be transmitted twice.
4. The serial number transmitted in a MSV ACK shall be the serial number of the message being responded to. The serial number transmitted in the MSV NAK shall be the serial number that was expected.
5. The value of the TRN placed in the header of the MSV ACK or NAK is the value of the TRN in the received MEX to which the ACK or NAK is referring.

Table 10. ACK/NAK Decision Based On Serialization

2.5 MEX Control Data

2.5.1 Structure

The structure of the MEX Control Data is shown in Figure 5 (MEX Control Data). The MEX Control Data shall only be used with the MEX.

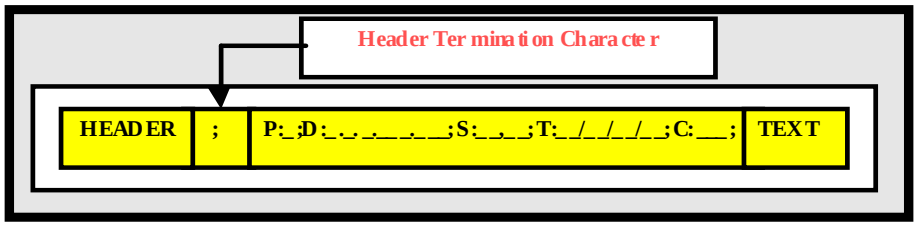


Figure 5. MEX Control Data

2.5.2 Control

The MEX Control Data has a length of 48 characters and is defined in Table 11 (MEX Control Characters).

MEX CONTROL IDENTIFIER	FIELD NUMBER	FIELD TITLE	ENTRY LENGTH	FIELD MAP
P	1	Message Priority	1N	N
D	1	Destination	13X	XSXSXSXXXSXXX
S	1	Message Segment ID	2N	NN
	2	Number of Segments	2N	NN
T	1	Day	2N	NN
	2	Hour	2N	NN
	3	Minute	2N	NN
	4	Second	2N	NN
C	1	Security Class/Override	1-3A	AAA

Table 11. MEX Control Characters

Set Identifier: P (Priority)

Field 1 Message Priority. One (1) digit used to specify the message priority for transmission and processing. The priority designation is determined by the message type in accordance with the entries in Table 12. Priority and Security Classification by Message Type. For the System Reply or Remarks Message (SYS.RRM) only, this entry is determined by the actual message content in accordance with the national procedures. Legal entries:

1 to 7 (where 1 is the highest and 7 is the lowest priority).

Set Identifier: D (Destination)

2.5.2.1.2 Field 1 Destination. Thirteen (13) characters used to specify the logical address of the message recipient. Use of this field enables the final destination of the message to be identified independently of the relaying system. Legal entries:
Digits: 0 to 9
Letters: A to Z
Space (Hex 20)
Period (.).

The period is only valid in the second, fourth, sixth, and tenth character positions, and shall always be present in those character positions.
NOTE: The logical address specified in Field 1 (Destination) of Set D (Destination) shall always be specified as that of the gateway cell of the intended recipient nation.

Set Identifier: S (Segment ID)

2.5.2.1.3 Field 1 - Message Segment Identifier. Two (2) digits used to specify the message segment of the transmission. Message segmentation is required if the message to be transmitted exceeds 512 characters. Legal entries:

01 to 99.

2.5.2.1.4 Field 2 - Number of Segments. Two (2) digits used to specify the total number of segments that the message contains in compliance with the rule that no single transmission shall exceed 512 characters. Legal entries:

01 to 99.

Set Identifier: T (Greenwich Mean Time (GMT)

2.5.2.1.5 Field 1 - Day. Two (2) digits used to specify the day of the month. Legal entries:

01 to 31.

2.5.2.1.6 Field 2 - Hour. Two (2) digits used to specify the hour of the day. Legal entries:

00 to 23.

2.5.2.1.7 Field 3 - Minute. Two (2) digits used to specify the minutes of the hour. Legal entries:

00 to 59.

2.5.2.1.8 Field 4 - Second. Two (2) digits used to specify the seconds of the minute. Legal entries:

00 to 59.

NOTE**:** The time specified is the time the message was transmitted by the sending system. ZULU time shall always be used on these interfaces.

Set Identifier: C (Classification)

2.5.2.1.9 Field 1 -Security Classification. One (1) to three (3) letter used to specify the security classification of the message. The classification is determined by the message type as defined in Table 12. Priority and Security Classification by Message Type, but may be amended by the message originator if a higher classification is required. For the SYS.RRM only, the classification is determined by the message content in accordance with the national procedures. Legal entries: See Table 12. Priority and Security Classification by Message Type.

OR

Classification Override. One (1) letter used to specify that a classified message has been transmitted over an unencrypted link. Such release of classified information over an unencrypted link shall require operator intervention, and shall be authorized only by mutual agreement. Legal entry:

The Letter, A.

2.6 Message Format Construction

2.6.1 Set Formats

Each message format consists of a series of Data Sets. A Data Set begins with a Set Identifier and ends with a semicolon (;) called the end-of-set marker. A Data Set consists of the following four parts:

Set Identifier

The Set Identifier consists of three to six consecutive non-space alphanumeric characters called a mnemonic, i.e., FZE.

First Field Marker

The Set Identifier is followed by a colon (:), the first field marker.

Fields

Each Data Set contains one or more Data Fields. The first field in a Data Set starts with the first character following the first field marker, followed by a variable number of character positions, i.e., FZE:_ _ _;.
Each subsequent field is preceded by a field marker which is a slash (/), or by an iteration marker which is a comma (,) and consists of a variable number of character positions, i.e., FZE:---;..
The slash (/) is used to separate fields within a set, i.e.,
GRID:_ _ _ _ _ _/_ _ _ _ _ _ _ _ _ _ ;.
The comma is used only to separate iterations of data fields and identify the start of each subsequent iteration, i.e., FZE:_ _ _,_ _ _,_ _ _;.
Set Terminator
A Data Set is terminated by a semicolon (;), the end-of-set marker which immediately follows the last character of the last data field, i.e., FZE:_ _ _;.

2.6.2 Data Set Sequence

Data sets, when data is specified, shall be transmitted in their order of definition in Section 6 (Message Formats and Processing Procedures). If a message is received with the sets in a different order, the receiving system, at its discretion, may or may not reject the message.

2.6.3 Data Set Suppression

Some Data Sets may be suppressed from a format prior to transmission. Data Sets and Data Fields are identified as being Mandatory (M), Conditional (C), Optional (O), or Not specified (N). These are defined as follows:

Mandatory
A mandatory set shall be present each time the message is transmitted.

Conditional
A conditional Set/Field shall be present or suppressed because of the presence or absence of information elsewhere in the message. One or more of the following rules may apply:

2.6.3.1.1 "Required IF" Rule

The Data Set/Field shall be present and becomes mandatory if some other Data Set/Field is present or because some other Data Set/Field is suppressed. Otherwise, the Data Set/Field is optional unless Rule 2 applies.

2.6.3.1.2 "Not Valid IF" Rule

The Data Set/Field shall not be present if some other Data Set/Field is present. A Data Set, which is not to be present, shall be suppressed from the message when the message is transmitted. A Data Field, which is not present, may be filled and if filled, shall contain the NATO 7-bit code for space (Hex 20), the number of characters used shall be up to the larger of the Field Map alternatives. Otherwise the presence of the Data Set/Field is optional unless Rule 1 applies.
Optional.
Optional Data Sets/Fields are those Sets/Fields which may contain information that is desirable, but is not mandatory, including conditional Data Sets which do not otherwise require presence or suppression in the message. If no information is provided to insert in optional fields, then the fields may be filled and if filled, shall contain the NATO 7-bit code for space (Hex 20). Optional fields which have alternative length Field Maps, but have no information provided, may be filled and if filled, shall contain the NATO 7-bit code for space (Hex 20); the number of characters used shall be up to the larger of the Field Map alternatives. Optional sets shall be suppressed if the Data Fields of the set contain only space characters.

MESSAGE TITLE	MSG TYPE IDENTIFIER	SERVICE CHARACTER	PRIORITY	SECURITY CLASS
AMMUNITION FIRE UNIT				
Ammunition Status	AFU.AMS	STX	4	NC
Deployment Command	AFU.DCMD	STX	4	NS
Fire Unit Status	AFU.FUS	STX	4	NC
ARTILLERY TARGET INTELLIGENCE				
Artillery Target Report	ATI.ATR	STX	4	NC
Target Information Request	ATI.TIR	STX	5	NC
FIRE MISSION				
Call for Fire	FM.CFF	DC4	2	NU
Fire Mission Command	FM.FMC	DC3 (Check Fire) or DC4 (other)	1 (Check Fire) or 2 (other)	NU
Message to Observer	FM.MTO	DC4	2	NU
Subsequent Adjustment	FM.SUB	DC4	2	NU
METEOROLOGICAL				
Computer	MET.CM	STX	4	NU
Request for MET Support	MET.RFM	STX	5	NU
Target Acquisition	MET.TA	STX	4	NU
NON-NUCLEAR FIRE PLANNING				
Compute a Fire Plan	NNFP.COMFP	STX	3	NC
Fire Plan	NNFP.FP	STX	3	NS
SUPPORT				
Air Space Coordination Area	SPRT.ACA	STX	4	NS
Battlefield Geometry	SPRT.GEOM	STX	4	NC
SYSTEM				
Request for Report	SYS.RFR	STX	5	NU
Reply or Remarks Message	SYS.RRM	STX	2-6	NU to NS

Table 12. Priority and Security Classification by Message Type

Not Specified

Data Sets that are not used have been deleted from the message formats; however, there exist Data Fields within some Data Sets that are never specified; i.e., Field 2 (Secondary Option) of Set OPT (Option). For these Data Fields the letter N is shown in the Occurrence Category Column of the Message Map and in the Set and Field Definitions for each message.

Data Field Suppression

Whenever a data field in a set containing multiple data fields is either defined as “Not Specified”, or does not have data for the current use of the message, then that field may be suppressed by not making any entries between the field delimiters. This means, if the field is the initial field of a set or iteration, then that field would appear as “:/” or “,/”. If the field is not the initial or last field of a set or iteration, then that field would appear as “//”. When the field(s) is (are) the last field(s) of a set or iteration, then the comma (,) (for iterations) or semi-colon (;) (the set terminator) may be moved to the left to replace the slash(es) for the preceding data field(s). Examples of valid and invalid suppression are as follows:

Valid: SETID:111/222/333,111/222/333;
SETID:111/222,111/222;
SETID:/222/333,111//333;
SETID:111,111;
Invalid: SETID:222/333,111/222/333;
SETID:111/333,111/222/333;
SETID:111/111;

2.6.4 Effects of Suppression

For those Data Sets/Fields that are suppressed prior to transmission, default values may be provided for those Sets/Fields that are essential to processing the message. If a message is received with suppressed Data Sets/Fields, then the receiving system shall process the message and apply the default value, if required, in accordance with its national procedures.

2.6.5 Data Insertion

If a Data Set is not suppressed in a message, then some data in a field within the set shall be specified. The insertion of data in any field of the set may be Mandatory, Conditional, or Optional. An Optional Data Set may contain a Mandatory field. This means inclusion of the Data Set may be optional for transmission, but if the Data Set is selected, then the Data Field within the set shall be mandatory.

An Optional Data Set may contain two or more Conditional Data Fields wherein an entry in one field precludes entry in the other field. In this case, the field specified shall contain data, and the other field(s) may be filled and if filled, shall contain the NATO 7-bit code for space (Hex 20).

If a default value exists for an optional field within a selected optional Data Set, and no data is specified in the field, then the default value shall be assigned by the receiving system.

2.7 Fire Support ADP Conventions

2.7.1 Data Entry Conventions

All Data Fields of the Exploitation Message (MEX) and the Service Message (MSV) shall use the following conventions for data entry:

a. The entry specified in any given Field is limited to the specified legal entries for that Field as defined in paragraph 6.n.3, Set and Field Definitions, and/or the stated Legal Entries Tables for each message format.

b. Data entry may be left or right justified; however, character positions at the beginning or end of a Data Field which contain no data entry may be suppressed except for fields in the message header or MEX Control Data. If the data entry is not suppressed, non-data filled character positions shall be transmitted as the NATO 7-bit code for space (Hex 20).

For example:
/_2
/2
/2_ are legal.

c. With the exceptions of the Originator, Destination, and plain text fields, the data entry made in any field shall not contain embedded spaces.

For example:
TST: PE_RS ; and : 1_ _11 ; are illegal
TST: PERS_ _; and :_ _ PERS; are legal

d. The entry made in the Destination field of the MEX control data and the Originator field of the Message Identification and Set REF shall consist of 13 characters defined as follows:

1) The second, fourth, sixth, and tenth character positions shall always be the special character Period (.) and shall always be present in those character positions.
2) Legal entries for the first, third, fifth, seventh, eighth, ninth, and eleventh through thirteenth character positions shall be Digits, 0 to 9; Space (Hex 20) and Letters, A to Z; with one digit or letter specified in at least one of the character positions.
3) Where there are consecutive character positions (the last two subfields) the digits/letters shall be left justified.

For Example: General Format: X.X.X.XXX.XXX
Legal Entries: "1._.A.C23.D45"
"_._._.___.D__"
Illegal Entries: "1._._.___.__D"
"_._._.___.1_1"
"_._._.4_7.___"

2.7.2 Numeric Data Fields

Data Fields of the MEX and MSV requiring numeric entry shall use the following conventions:

a. A range of legal values is established. The specified numeric value shall be within the ranges specified in the following paragraphs for the MEX Message Header and Control Data, and in paragraph 6.n.3, Set And Field Definitions for each message format.
b. If the limits of the range are specified as integers, then the value specified shall be an integer. Leading zeros (0) are to be tolerated in numeric fields of variable length. For example, given the range 1-99 then 1 and 01 are both legal.
c. If the limits of the ranges are specified as decimal values, then the specified values shall be any decimal value within the specified limits. For example, given a range of 0.00 to -10.00, then:

(/-_1.1_/)
(/-11___/)
(/_.009_/)
(/__1_1_/) are illegal
(/-1____/)
(/_-1.1_/)
(/-1.11__/)
(/-.11__/) are legal

d. Unsigned numeric values shall be assumed to be positive values. A negative value shall be preceded by a minus (-) sign.

2.7.3 MEX Repeatability Conventions

The MEX shall conform to the following repeatability convention:
When the fields of a MEX Data Set are repeatable as a group, the sequence of NATO 7-bit code characters representing the Set ID are followed by a numeric character indicating the number of iterations permitted.

2.7.4 First Element of the Message

The first element of the message text to be transmitted shall be Field 1 (Message Type Identifier), followed by Field 2 (Originator), of Set MSGID (Message Identification). The set identifier "MSGID", and its associated start-of-first-field marker colon ":", shall be omitted from all message transmissions; i.e., Field 1 of Set MSGID shall always immediately follow the last character of the MEX Control Data. For example, in the AFU.AMS message:

AFU.AMS/_._._.___.___; is the message type identifier (Field 1) followed by a slash (/) followed by the message originator (Field 2) and the set terminator semicolon (;).

NOTE: The logical name specified in Field 2 (Originator) of Set MSGID (Message Identification) shall always be specified as that of the gateway cell of the Nation originating the message.

2.8 Encryption Identification

One (1) character used to specify the encryption identification, see Figure 2 (Exploitation Message (MEX), and Figure 3 (Service Message (MSV), to indicate whether or not end-to-end encryption is in use. A NUL character shall indicate that end-to-end encryption is in use and a SI character shall indicate that no end-to-end encryption is in use.

2.8.1 End-To-End Encryption Control

When mutually agreed upon by the interfacing nations, end-to-end encryption may be used.

2.8.2 Encryption Synchronization

If the encryption identification character is set to NUL, then the end-to-end encryption synchronization field , see Figure 2 (Exploitation Message (MEX), and Figure 3 (Service Message (MSV), is used to synchronize/key the end-to-end encryption system. Legal entries depend upon the end-to-end encryption system in use.

2.9 Cyclic Redundancy Check (CRC)

A CRC is used in conjunction with the Error Detection and Correction (EDC) capabilities of the Hamming code to provide the required error performance, i.e. that no more than one message in a million shall contain an undetected error. When end-to-end encryption is used, the message shall be encrypted prior to the CRC calculation. The conversion from 7-bit to 8-bit characters for CRC calculation shall be performed after end-to-end encryption. The message shall be discarded upon receipt if an exact bit for bit match is not obtained, as un-correctable errors are present.

2.10 End of Text (EOT) Characters

A minimum of four (4) EOT characters shall be added to the end of the message following the CRC characters. Additional EOT characters shall be added to make the message into an integral number of 16 character blocks. Therefore, an additional 15 EOT characters could be added.

2.11 Opening the interface

2.11.1 The MSV specifying the Service Character "ENQ" (see paragraph 0) is defined for the purpose of requesting the opening of an interface in one direction, i.e., from the originator of the MSV ENQ to the recipient of the MSV ENQ. An MSV ACK shall indicate acceptance of the request to establish an interface. No message is defined for the purpose of refusing a request to open the interface. An interface can be opened in either direction independently; however, the interface shall be opened in both directions prior to the exchange of any operational (MEX) messages and it shall be normal practice to open an interface in both directions at the same time (i.e., a sequence to open an interface in one direction will be immediately followed by a sequence to open the interface in the opposite direction). The physical requirements for establishing an

interface are the exchange of CEOI information, i.e., radio frequencies, computer addresses, etc. Communications shall initially be established by voice to ensure the link is established. One nation shall be designated Net Controller (NC). Normally, the NC will send the initial MSV ENQ. After digital communications are established, one nation (the supporting nation, if not operating in mutual support) should transmit the appropriate file messages, i.e., Ammunition Fire Unit data, Battlefield Geometry data, etc. The other nation will then transmit its pertinent information in response.

2.11.2 Interface Verification and Maintaining the Interface

The MSV specifying the Service Character "V" (see paragraph 0) is defined for the purpose of verifying an interface. The MSV specifying the Service Character "ENQ" (see paragraph 0) may also be used for the purpose of verifying an interface. For both MSV V and the MSV ENQ, the valid response shall be the MSV ACK, which shall confirm that the interface is open and that the message serialization is correct in one direction, i.e., from the originator of the MSV ENQ to the recipient. For the purpose of verifying an interface, a system may transmit either an MSV V or an MSV ENQ but must be capable of receiving and responding correctly to both. Should digital communications be disrupted due to serialization error resulting in the transmission of an MSV NAK, the corrective procedure shall be as described at paragraph 2.11.4. Should digital communications be disrupted due to any other cause, then the NC shall establish voice communications to determine the exact cause of the problem. Once the problem has been resolved, digital communications should be resumed as described in paragraph 2.11

2.11.3 Terminating the Interface

The MSV specifying the Service Character "DC1" (see paragraph 0) is defined for the purpose of requesting the termination of an interface. An MSV ACK shall indicate acceptance of the request to terminate an interface. No message is defined for the purpose of refusing a request to terminate an interface. Transmission of an MSV DC1 in either direction, followed by an MSV ACK response, shall immediately terminate the interface in both directions.

2.11.4 Effect of MSV NAK

The MSV specifying the Service Character "NAK" (see paragraph 0) is defined for the purpose of responding to a received message in which a serialization error is detected. When a system receives a message with a serialization error, it shall transmit an MSV NAK specifying the expected message serialization number, reset its expected message receipt serialization as specified at Table 11 (MEX Control Characters), and maintain its message transmission serialization unchanged. On transmission of an MSV NAK, the system shall immediately close the interface in both directions and the operator shall be informed. When a system receives an MSV NAK, it may either immediately close the interface in both directions, with the operator being informed, or it may initiate automatic re-synchronization of serial numbers, in which case it is desirable but not essential that the operator be informed that an MSV NAK has been received. If the system that receives the MSV NAK closes the interface, the procedure to re-establish the interface shall be for the operators to resolve the serialization problem by voice and then re-open the interface as described at paragraph 2**Error! Reference source not found.**.11 Alternatively, the system that receives the MSV NAK may initiate automatic serial number re-synchronization by immediately transmitting an MSV ENQ (automatically or with operator action) with message serialization equal to the expected value given in the MSV NAK incremented by one. The response shall be an MSV ACK followed by an MSV ENQ (which shall in turn elicit an ACK response). This sequence will re-open/verify the interface in both directions.

2.11.5 Response to MSV ENQ

Paragraphs 2.11 and 2.11.3 describe the use of the MSV ENQ in MSV message exchange sequences to open and verify an interface, and to effect automatic re-synchronization of message serialization. If the system that sends the initial MSV ENQ in any such sequence receives an MSV ENQ in response, it shall NOT respond by transmitting a further MSV ENQ.

2.12 Retransmissions

The Transmission Repeat Number (TRN) in the Header reflects the number of times a message has been transmitted. For the initial transmission of a message, the TRN shall be zero (0). If no MSV ACK or MSV NAK is received within the expected response time, the message shall be automatically retransmitted and the TRN incremented by one (1) up to a maximum of four (4) transmissions. If after the fourth transmission of the message, and no MSV ACK or NAK has been received, the transmitting system shall cease transmitting to the recipient; operator intervention will be required to re-establish digital communications as described in paragraph 2.11. The TRN shall range in value from 0 to 3

2.13 Intersystem Relay

A capability shall exist to address and transmit a message to a directly interconnected system and to an addressee in a system which requires communications through one or more intermediate systems.

a. The MEX may be routed through intermediate addresses by the use of the following:
   1) In the message Header.
      Addressee - Identifies the recipient for the current transmission. This address may or may not be the final destination.
      Originator - Identifies the address of the transmitting system. This may or may not be the originator of the message.
   2) In the MEX Control Data.
      Destination - Identifies the intended ultimate recipient of the message.
   3) In the MEX Main Test.
      Originator - Identifies the original initiator of the message.
b. If an intermediate system is unable to transmit an intersystem relay message to the next station enroute to the final destination (another intermediate station or the final destination), then that system shall transmit a SYS.RRM to the message originator stating that the message could not be forwarded.

2.14 Data Blocking

Data shall be packed into 16 character blocks for transmission such that the message shall be composed of N data blocks (N being an integer) to a maximum of 32 data blocks, excluding any off-line encryption synchronization sequence. That portion of a transmission after the last bit of character synchronization, including the last bit of the final EOT, shall not exceed 512 characters, excluding the off-line encryption sequence, if present. A minimum of 4 EOT characters shall indicate the end of transmission. The EOT character shall be used to make the message into an integral number of 16 character data blocks. The number of EOT characters used may vary from the minimum of 4 to a maximum of 19, dependent upon the number of characters in the message.

2.15 Error Detection and Correction (EDC)

The technique for applying EDC is Hamming code. The EDC is used in conjunction with the CRC to provide the overall performance demanded by the system in that no more than one message in a million shall contain an un-correctable error. This encoding process guarantees detection of all characters with two bits in error, and the correction of all characters with single bit errors. The performance on errors exceeding two bits per character is not specified.

2.15.1 Time Dispersal Coding (TDC)

The TDC technique is used to protect against bursts of errors. This technique will convert a continuous sequence of up to 16 bit errors into uniformly dispersed single errors in 16 characters.

2.16 Bit and Character Synchronization

Bit and character synchronization is described below.

2.16.1 Bit Synchronization

The bit synchronization pattern shall consist of an alternating one-zero (1-0) pattern with a total length of 33 bits starting and finishing with a 1-bit.

2.16.2 Character Synchronization

The character synchronization pattern shall consist of a 63-bit maximal length pseudo-random sequence. This 63-bit sequence shall follow the bit synchronization sequence without a break. The logic for the production of the bit pattern is shown in Figure 6 (Character Synchronization).

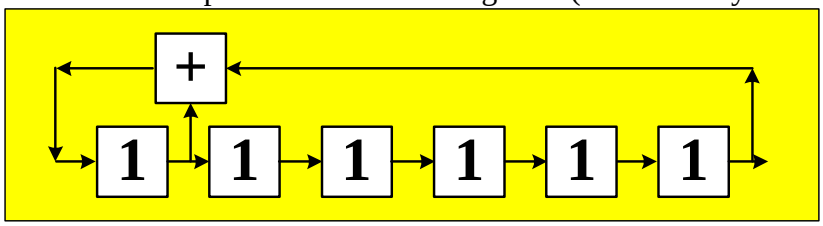


Figure 6. Character Synchronization

2.16.3 Key-Time Delay

The key-time delay is a variable, which is designed to compensate for transmitter and receiver turn-on times, receiver readiness after transmission turn around time, and the additional effect of any remote control devices. The cumulative effect of which is the loss of the first bits in each message transmission. The key-time delay appropriate to the communications equipment used shall be specified in the IOP, and must be selected by the operator when the interface is initialized. Valid key-times are specified in Table 13 (Key-Time Delay). During the period of key-time delay, a pattern of alternating ones and zeros shall be output to the communications medium.

KEY-TIME (SECONDS)	TOLERANCE (SECONDS)
0.0	0
0.5	-0 + 0.1
0.7	-0 + 0.1
1.2	-0 + 0.1
2.0	-0 + 0.1
2.5	-0 + 0.1
3.3	-0 + 0.1

Table 13. Key-Time Delay

2.16.4 Data Flag

A data flag shall be transmitted to identify transmissions over shared voice/digital communications links.

2.16.5 Link Encryption

When link encryption is used, the key-time delay shall allow time for the link encryption device to generate its synchronization pattern and the data flag.

2.17 Net Access Control

The number of subscribers (digital and voice) on a single communications channel requires a net sensing function and a net access control function to ensure orderly and non-conflicting data transmissions.

2.17.1 Net Sensing

An automatic net sensing function shall be provided to monitor the net digital data traffic. This net sensing function shall be able to inhibit data transmissions if the net is busy. Prior to any voice transmission the operator must monitor the net to ensure that it is not busy. Operator monitoring can be accomplished by audio and/or visual means. Each system shall determine the completion of data transmissions and impose the net access controls necessary to maintain correct net operation.

2.17.2 Net Access Control Function

See Figure 8, Net Access Control (Message Transmission), and Figure 9 (Net Access Control (Message Reception).

2.17.3 WAIT Timer Process

When a system detects a digital message, other than an MSV ACK or NAK which is not addressed to that system, it shall delay any pending transmission on the net for a period determined by a WAIT timer. The WAIT timer period is designed to provide time for the transmission of the acknowledgment message by the system to which the transmission was addressed. The system receiving a digital message other than an MSV ACK or NAK, shall, within 500 milliseconds of receipt, initiate the appropriate acknowledgment of the transmission to the originating system. Systems with the WAIT timer running shall cancel the WAIT timer once an MSV ACK or NAK has been detected.

2.17.4 HOLD Timer Process

When a system transmits a digital message other than an MSV ACK or NAK, it shall initiate a HOLD timer process. All further transmissions by that system shall be inhibited during the period of the HOLD timer. If the HOLD timer should expire before the MSV ACK or NAK is received by the originating system, then the message shall be retransmitted with both the serialization and TRN incremented. A message shall be transmitted up to four times, initial plus three retransmissions. If the HOLD timer should expire after the fourth transmission, then no further messages shall be transmitted to that subscriber until the problem has been resolved.

2.17.5 Net Access Delay Timer (NADT)

Net Not Busy

If a message is pending transmission and the net sensing function determines that the net is not busy, then the message transmission shall be initiated within 25 milliseconds of the time that the net was determined as not busy, provided that it is the initial transmission of the message and that neither the HOLD or WAIT timers are running. If the system was not the last system to access the net, then the transmission shall be considered the initial transmission. If the pending transmission is a subsequent transmission, then the NADT process shall be initiated and allowed to expire before the net is again sensed for a busy status. A subsequent transmission is any transmission, which had to wait for the expiration/cancellation of the HOLD timer.

Net Busy

If the net sensing function determines that the net is busy, then the sensing function shall continue to sample the net until it is no longer in a busy status. Once the net is clear the NADT shall be set. After the NADT expires the net sensing function shall again check the net for a busy status. If the net is busy, then the NADT shall be reset; if the net is clear, then the message shall be transmitted.

2.18 Evaluation of Timers

2.18.1 HOLD Timer

T-HOLD (Seconds) = Factor + Key Time Delay
The T-HOLD is rounded down (Truncated) to the next half second, i.e., 4.47 seconds is rounded to 4.0 seconds, and the Factor is dependent upon the link encryption device being used. See Table 14 (Hold Time Factors).

2.18.2 WAIT Timer

T-WAIT = T-HOLD (Seconds)

BIT RATE	ENCRYPTION	FACTOR
1,200	ENCRYPTED	1.61
600	ENCRYPTED	2.17
1,200	CLEAR *	1.61
600	CLEAR *	2.17
*** For use in emergency cases only.**		

Table 14. Hold Time Factors

2.18.3 Net Access Delay Timer

Purpose
The purpose of the NADT is to delay the transmission of a message, other than the MSV ACK or NAK, in a manner which preserves the net access precedence order assigned to subscribers. The precedence order is intended to reduce the number of digital message conflicts, which can occur on a shared net, and to prevent a single system from monopolizing the net by virtue of its higher organizational precedence. The calculation and values for the interfaces will be stated in the technical manuals and in the respective IOPs.

Delay Period
The delay period is determined at the time the operator enters data supplied at system initialization or at any other time that net parameters require modification.

Message Priorities
The data is entered in four parts. It is divided into two groups of two alternative delays. The first group is used for determining the transmission delays associated with high priority messages (Priorities 1-3), and the second group for low priority messages (Priorities 4-7). Within each group, two alternative priorities are specified; one for initial transmissions and the other for subsequent transmissions. The values shall range from 0 to 15 seconds, in steps of one half second.

Net Access Delay Times
Table 15 (Net Access Delay Times), illustrates the net access delay times. The illustrated values are in units of half seconds. In the illustration System A has the first priority to transmit an initial high priority message. Assuming that each of the three systems has two high priority messages

ready for transmissions, the precedence is as follows: System A, with the shortest access delay time, has first access to the net. Upon return of the MSV ACK or NAK (or expiration of the HOLD timer), System B, with a one second net access delay time for transmitting its initial message, has first priority for net access. In this example, System B will next access the net, followed by System A (second message), System B (second message), System C (first message), and then System C (second message).

2.19 Segmentation of Messages

Messages that exceed 512 characters, to include Header and MEX-Control Data, shall be transmitted in segments. All segments except the last segment shall contain 512 characters. The last segment may contain up to and including 512 characters. (512 characters to include CRC and EOTs for each segment.)

	HIGH PRIORITY		LOW PRIORITY	
SYSTEM	INITIAL TRANSMISSION	SUBSEQUENT TRANSMISSION	INITIAL TRANSMISSION	SUBSEQUENT TRANSMISSION
A	1	4	5	8
B	2	4	6	8
C	3	4	7	8

Table 15. Net Access Delay Times

All Segments shall contain identical MEX Control Data, with the exception of the segment number, as defined by Field 1 (Message Segment Identifier) of Set S (Segment ID) at paragraph 2.5.2. Segments shall be produced in sequence from the beginning of the message text and shall be transmitted in numerical order with Field 1 of Set S specified “01” for the first segment transmitted, “02” for the second segment, etc. Figure 7 (Segmentation of Messages), gives an example of a three segment message.

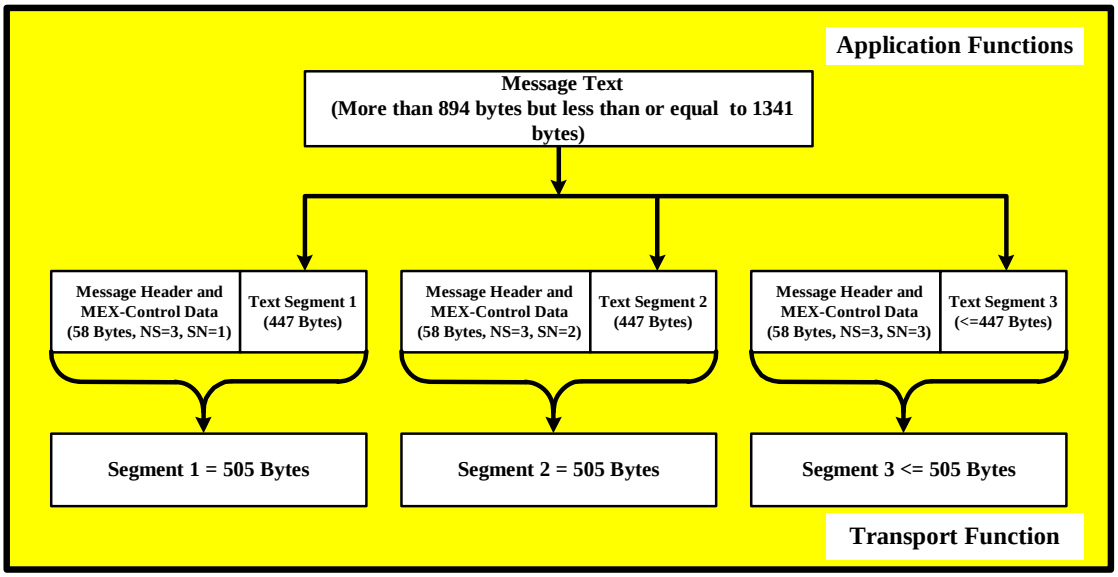


Figure 7. Segmentation of Messages

A reception timer (set to 300 seconds) shall determine the maximum interval between successful reception of successive segments. The timer shall be reset after the reception of each segment of a segmented message.

If any of the above rules are violated, or the reception timer expires, then the receiving system shall transmit a SYS.RRM message specifying the error and any partially received message shall be discarded.

Whenever transmission of a segmented message has been prematurely terminated and, if the transmitting system determines that the data is still applicable, all segments of the message will be transmitted again.

The transmission of a segmented message may be interrupted by another transmission, from the same station, only for a priority 1 message. Due to the shorter net access delay of other stations on a multi-station net, those stations may also interrupt the transmission of the segmented message with messages of equal or lower priority. These may also be segmented message.

2.20 Transmission Bit Rates

The following transmission bit rates are permitted:

a. 1200 BPS (Bits Per Second) (Preferred)
b. 600 BPS

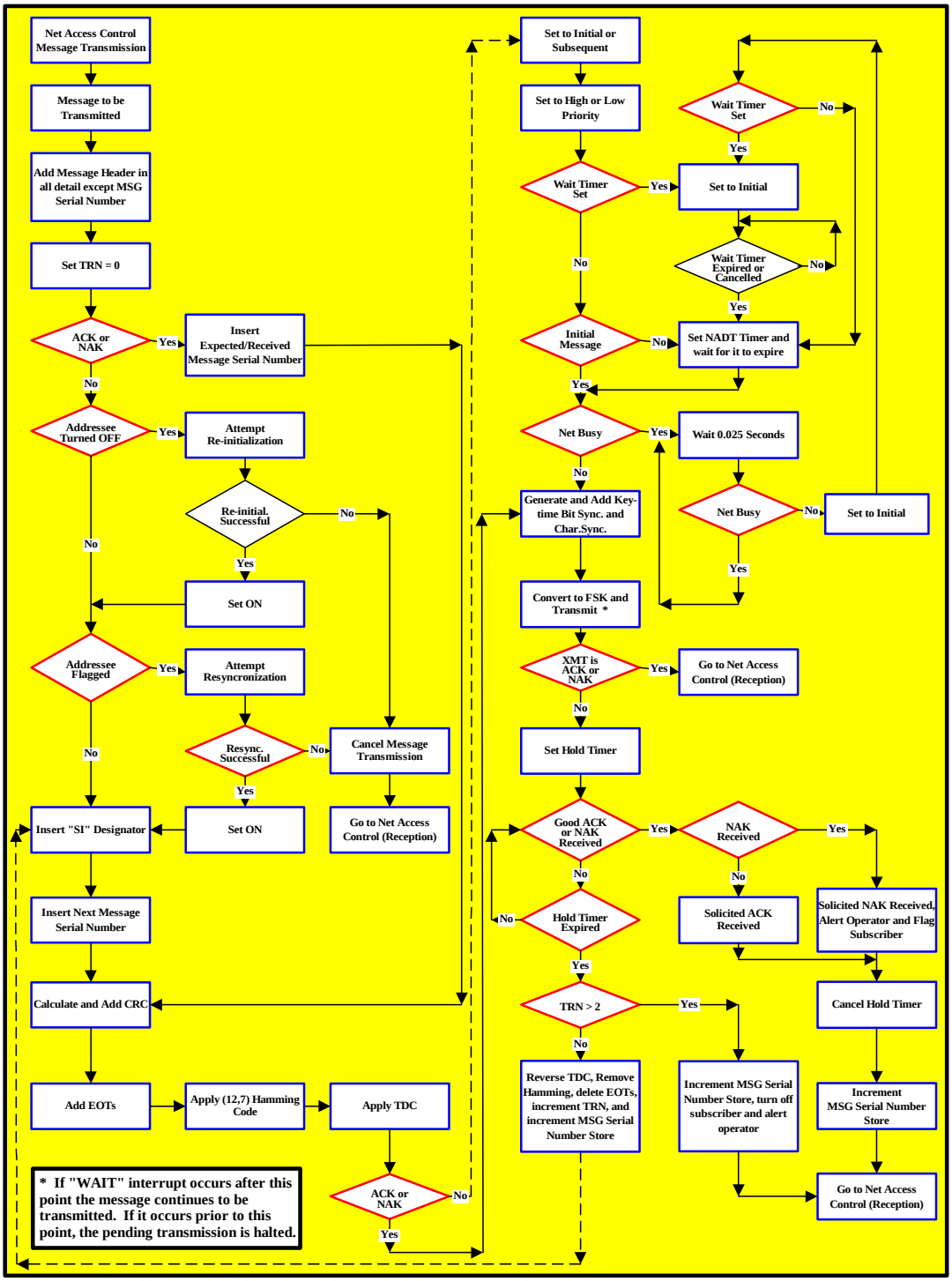


Figure 8. Net Access Control (Message Transmission)

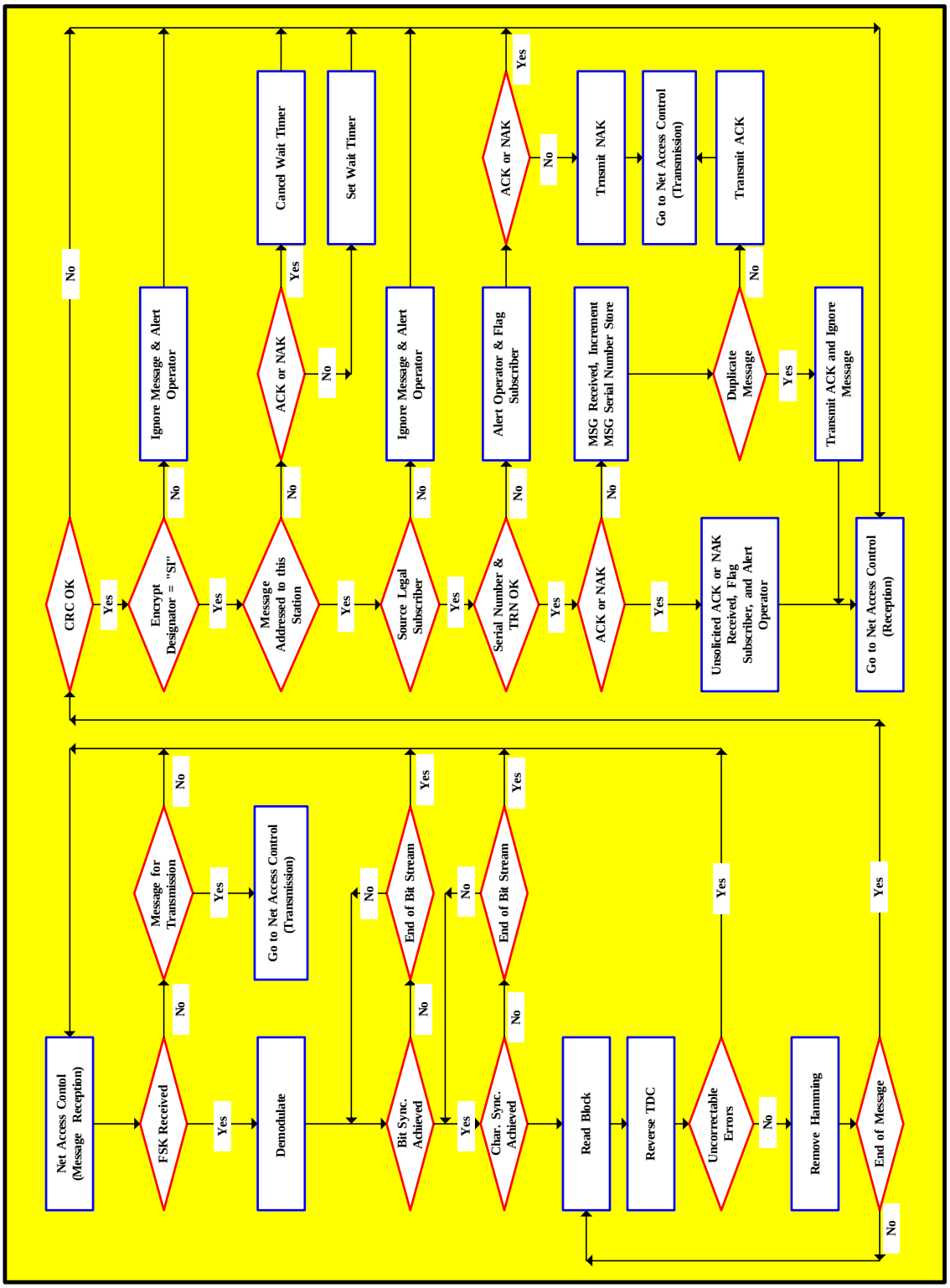


Figure 9. Net Access Control (Message Reception)

2.21 Message Syntax

2.21.1 Notations Used in Description

:=	Syntactical assignment
|	Exclusive or
&	Followed by
()	Grouping of terms and factors
$()^n$	N occurrences required (i.e. mandatory)
$()^{m-n}$	A minimum of m occurrences are required but up to n occurrences are permitted
{}	Optional occurrence or repetition of unlimited number
$\{\}^n$	Optionally up to a maximum of n occurrences are permitted
#	Comment marker

2.21.2 Symbols Used in Description

Statement	Syntactical expression
Identifier:	= expression
Expression	List of alternatives of terms Identifier1: = term1 & term2 { & term3} Identifier2: = term1 | term2 | term3
Term	Identifier, string, (expression in parenthesis) or comment Term: = Identifier | string | (expression) | { expression } | comment
Identifier	Syntactical entity letter { & character }
String	Sequence of characters within the permitted character set. A string shall be embedded within double apostrophes ("). " character {character } "
Comment	Comment up to the end of the current line initiated by the sign #. # character Comment := #Character { & character }
Character	Any character within the permitted character set

2.21.3 Description of the Message Syntax

Message	:=	"SI" & msg-mex & CRC & $(eot)^{4-19}$
	|	"SI" & msg-msv & CRC & $(eot)^4$
Msg-mex	:=	Header & ";" & mex-cd & text
Msg-msv	:=	Header
Header:	=	Hea-adr & hea-org & trn & srl & svc
Hea-adr	:=	$(alphanumeric)^2$
Hea-org	:=	$(alphanumeric)^2$
Trn :=		"0"
	|	"1"
	|	"2"
	|	"3"
Srl	:=	$(digit)^2$

Svc	:=	ACK
	|	NAK
	|	ENQ
	|	V
	|	DC1
	|	DC3
	|	DC4
	|	STX
#		Permitted entries for MSV messages are ACK, NAK, ENQ, DC1, and #V; for MEX Messages DC3, DC4, and STX.
Mex-cd	:=	"P:" & prio & ";D:" & ident & ";S:" & seg-id & "," & seg-n & ";T:" & day & "/" & hour & "/" minute & "/" & second & ";C:" & Classification & ";"
Ident	:=	$(\text{ANS} \ \& \ ".")^3 \ \& \ (\text{ANS})^3 \ \& \ "." \ \& \ (\text{ANS})^3$
Prio	:=	Digit
	#	1 - 7
Seg-id	:=	$(\text{Digit})^2$
	#	01 - 99
Seg-n	:=	$(\text{Digit})^2$
	#	01 - 99
Day	:=	$(\text{Digit})^2$
	#	01 - 31
Hour	:=	$(\text{Digit})^2$
	#	00 - 23
Minute	:=	$(\text{Digit})^2$
	#	00 - 59
Second	:=	$(\text{Digit})^2$
	#	00 - 59
Classification	:=	"NU"
	|	"NR"
	|	"NC"
	|	"NS"
	|	"A "
CRC	:=	CRC1 & CRC2 & CRC3
CRC1	:=	$(\text{bits})^7$
	#	The first 7 bits of the CRC.
CRC2	:=	$(\text{bits})^7$
	#	The second 7 bits of the CRC.
CRC3	:=	$(\text{bits})^7$
	#	The last 2 bits of the CRC followed by five '1' bits.
Bits	:=	Binary digits
	#	'1' or '0'
Character	:=	Alphanumeric
	|	Special
Alphanumeric	:=	Letter
	|	Digit

ANS := Letter
| Digit
| Space (Special Character)

Text := Msg-id & set { & set }
For the sequence and occurrence of specific sets see the description of messages. Empty sets must be deleted for transmission.

Msg-id := Msg-type & "/" & originator & ";"

Msg-type := AFU.AMS
| AFU.DCMD
| AFU.FUS
| ATI.ATR
| ATI.TIR
| FM.CFF
| FM.FMC
| FM.MTO
| FM.SUB
| MET.CM
| MET.RFM
| MET.TA
| NNFP.COMFP
| NNFP.FP
| SPRT.ACA
| SPRT.GEOM
| SYS.RFR
| SYS.RRM

Originator := Ident

Set := Set-id & ":" & iteration { & "," & iteration }^{n} & ";"
Iterations are understood being a group of fields, see set whose fields shall not be repeated is also understood being an Set MUE. A set whose fields shall not be repeated is also understood being an iteration (iteration counter being '1') and therefore omitted, see Set TST. For the Sequence and occurrence of specific iterations see the description of messages.
Empty iterations may not occur ahead of not empty iterations. Empty iterations may be deleted prior to transmission including the iteration marker ",".

Set-id := Set-name & { it-count }
The number of positions cannot exceed six (6). All alphabetic characters in set-id shall be upper case characters.

Set-name := Letter { & letter }^{5}

It-count := Digit

Iteration := Field { & "/" & field }
Field title and contents of each field are different; for the sequence and occurrence of specific fields, see the description of messages.
Empty fields may be deleted at the end of a set or of an iteration.
Empty fields containing up to the maximum number of character
positions must be tolerated when received.
N := (it-count - 1)

Field	:=	{ character }
	#	A field may consist of an optional number of characters i.e.; 0 to any number as specified; see specification of legal entries.
Digit	:=	"1"
	|	"2"
	|	"3"
	|	"4"
	|	"5"
	|	"6"
	|	"7"
	|	"8"
	|	"9"
	|	"0"
Letter	:=	"A"
	|	"B"
	|	"C"
	|	"D"
	|	"E"
	|	"F"
	|	"G"
	|	"H"
	|	"I"
	|	"J"
	|	"K"
	|	"L"
	|	"M"
	|	"N"
	|	"O"
	|	"P"
	|	"Q"
	|	"R"
	|	"S"
	|	"T"
	|	"U"
	|	"V"
	|	"W"
	|	"X"
	|	"Y"
	|	"Z"
	|	"a"
	|	"b"
	|	"c"
	|	"d"
	|	"e"
	|	"f"
	|	"g"
	|	"h"
	|	"i"
	|	"j"
	|	"k"

| "l"
| "m"
| "n"
| "o"
| "p"
| "q"
| "r"
| "s"
| "t"
| "u"
| "v"
| "w"
| "x"
| "y"
| "z"

Special := " " # Space (Hex 20)
| "%"
| "("
| ")"
| "*"
| "+"
| "," # Comma
| "-" # Hyphen
| "." # Period
| "/"
| ":"
| "?"

The Set Termination Character (;) is prohibited for all field entries.

The slash (/), field marker, and the comma (,) iteration marker, are prohibited for all fields except SRMK and RMKS.

3. Flow Diagrams

Flow diagrams depicting the flow of message processing are shown in Figure 10 (Link Establishment/Disestablishment) through Figure 15. Fire Plan Processing Solid lines represent data transfer and control of the process to the receiving system. Dashed lines represent data transfer only, processing continues at the transmitting system, while receipt of the data causes some form of action at the receiving system. Flow diagrams are as follows:

a. Figure 10 Link Establishment/Disestablishment

b. Figure 11 Interface Establishment Processing

c. Figure 12 Deployment Processing

d. Figure 13. Fire Mission Processing

e. Figure 14 Check Fire Processing

f. Figure 15. Fire Plan Processing

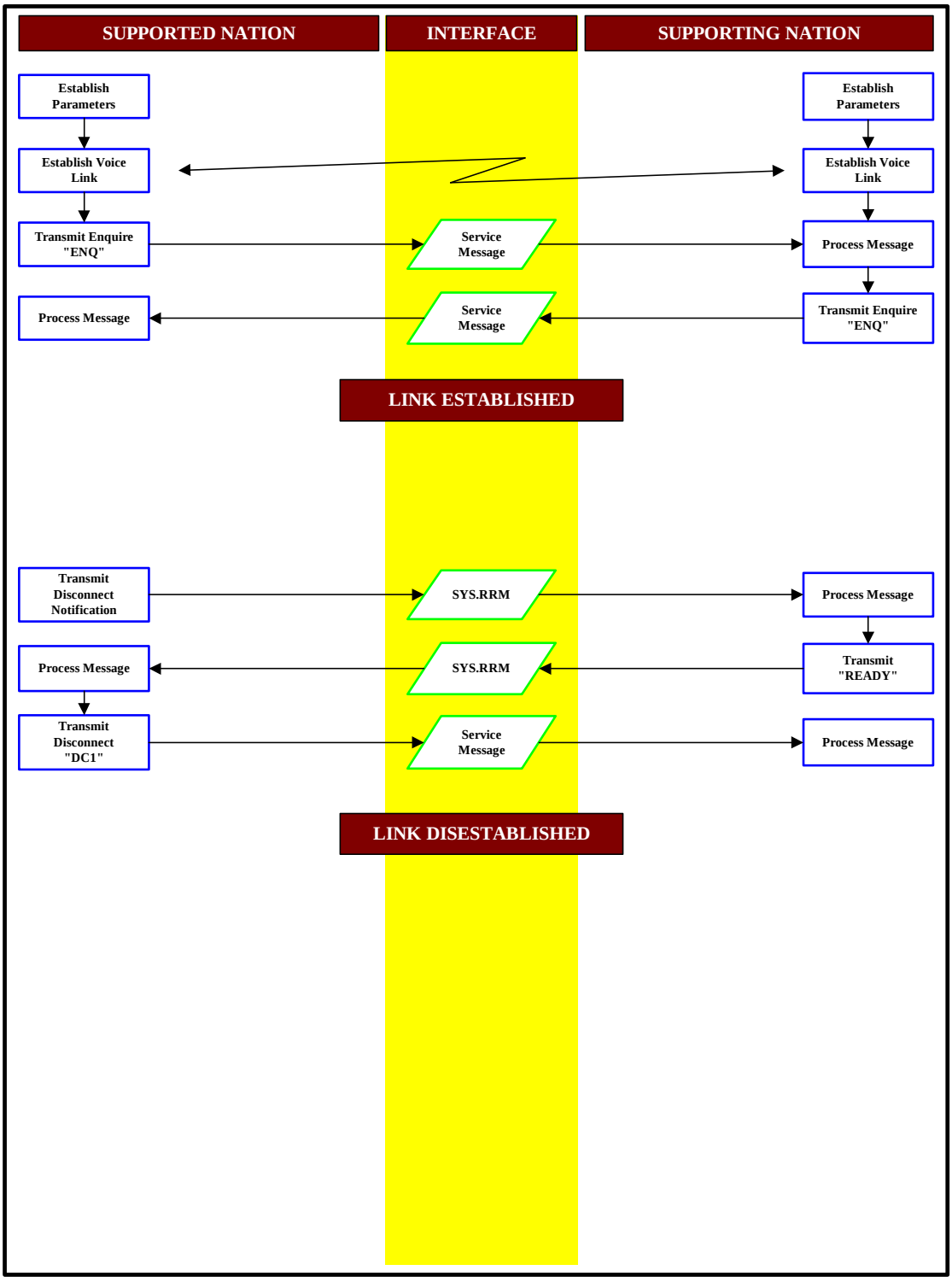


Figure 10. Link Establishment/Disestablishment

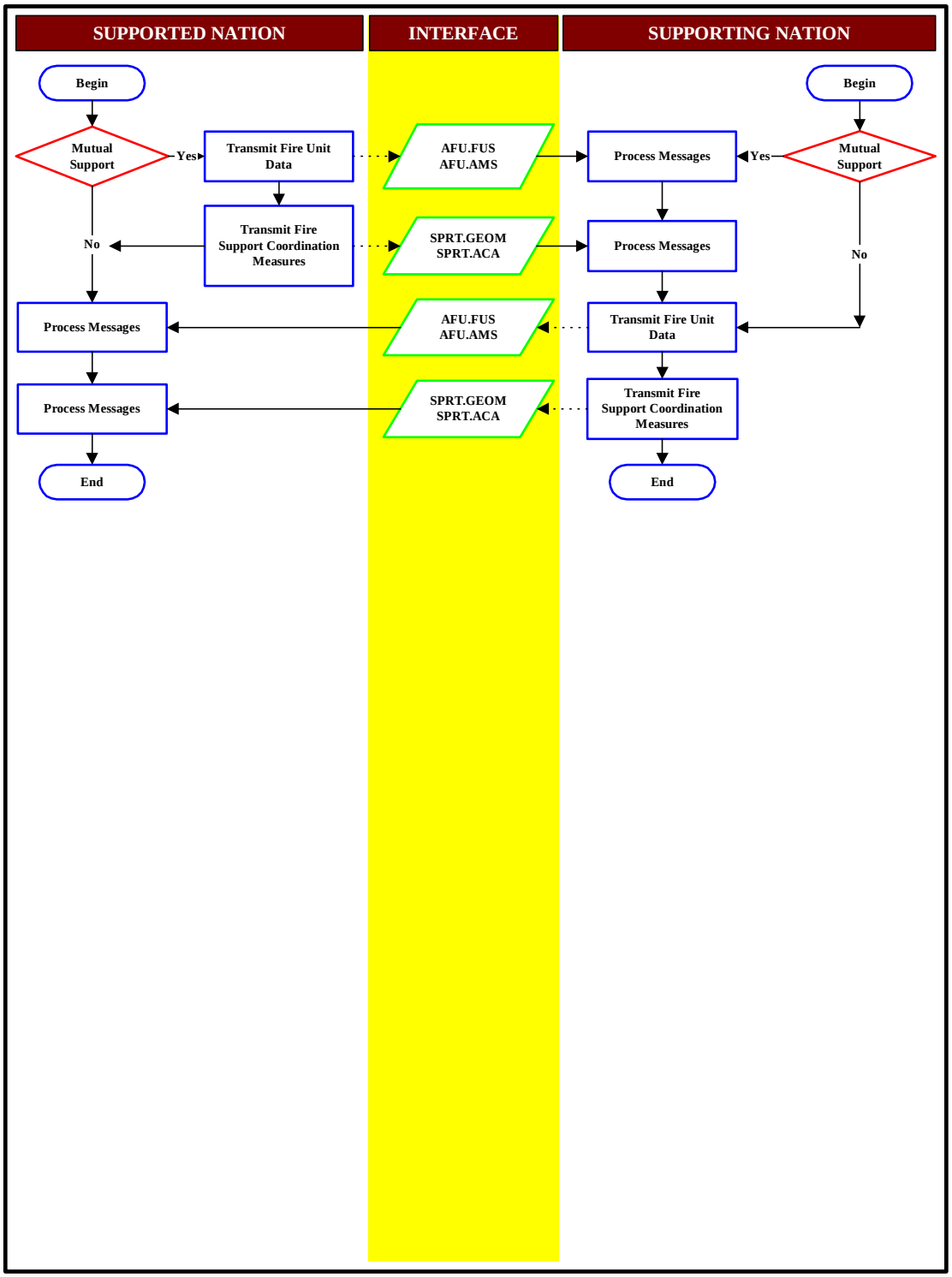


Figure 11. Interface Establishment Processing

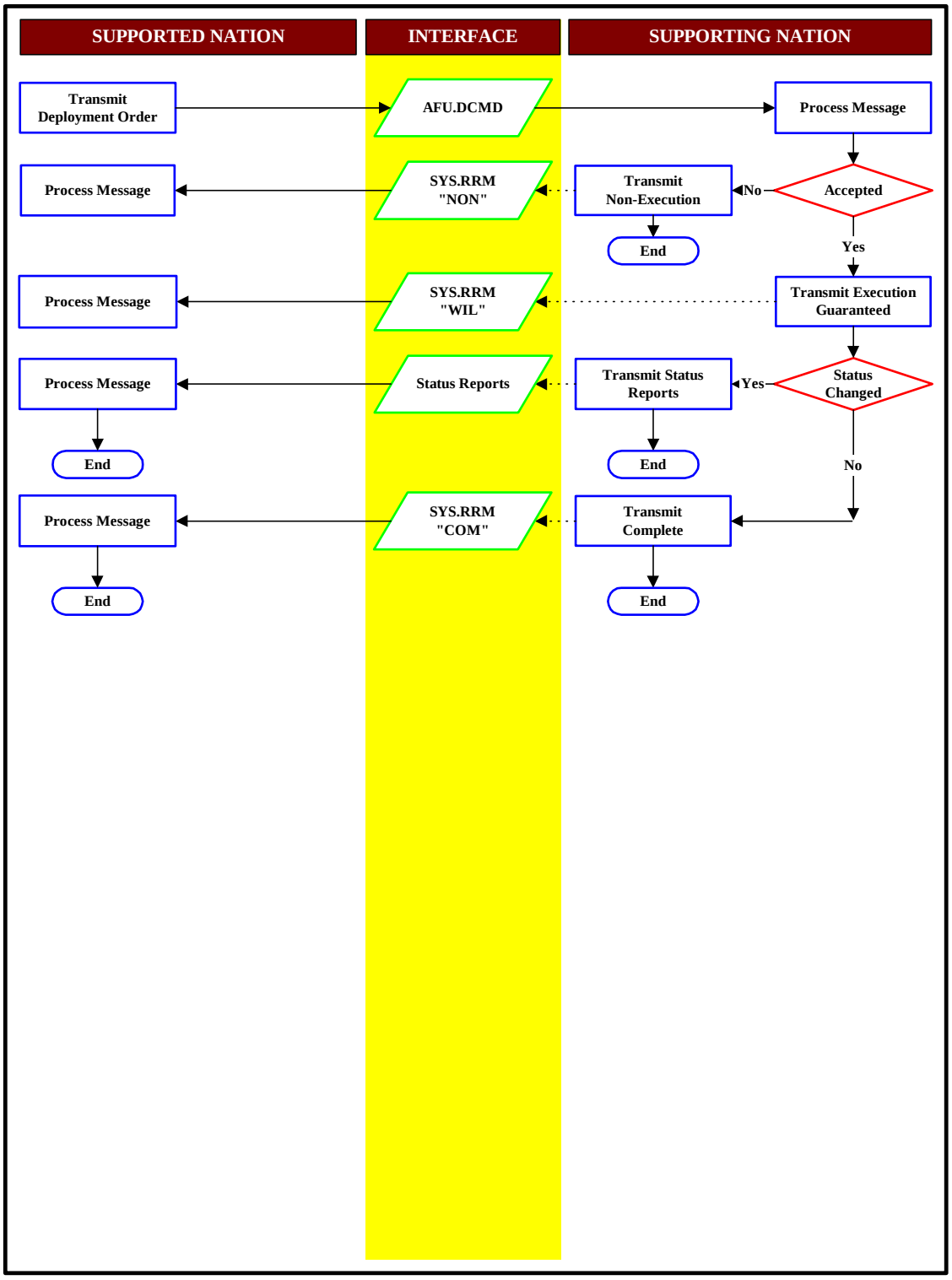


Figure 12. Deployment Processing

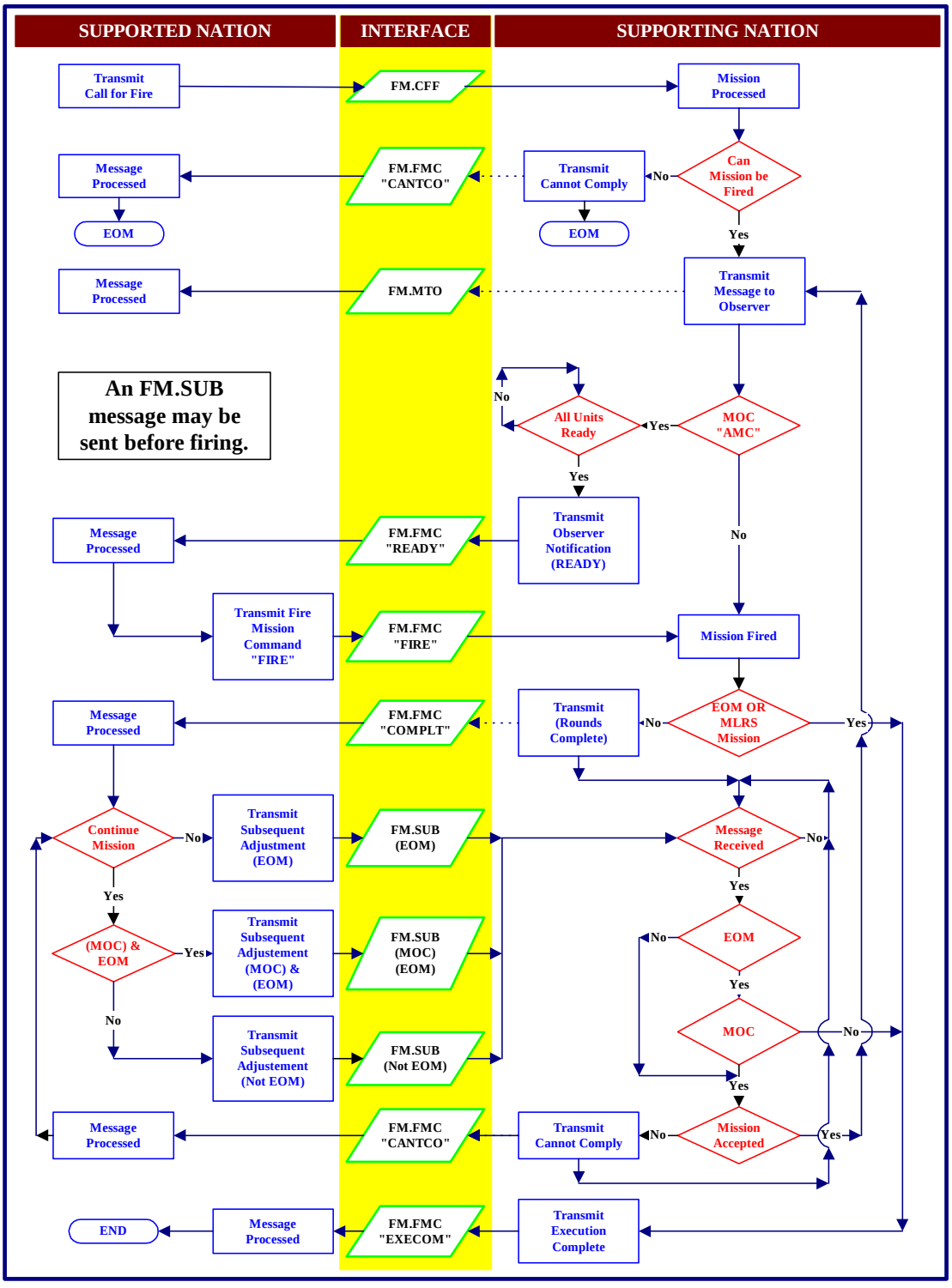


Figure 13. Fire Mission Processing

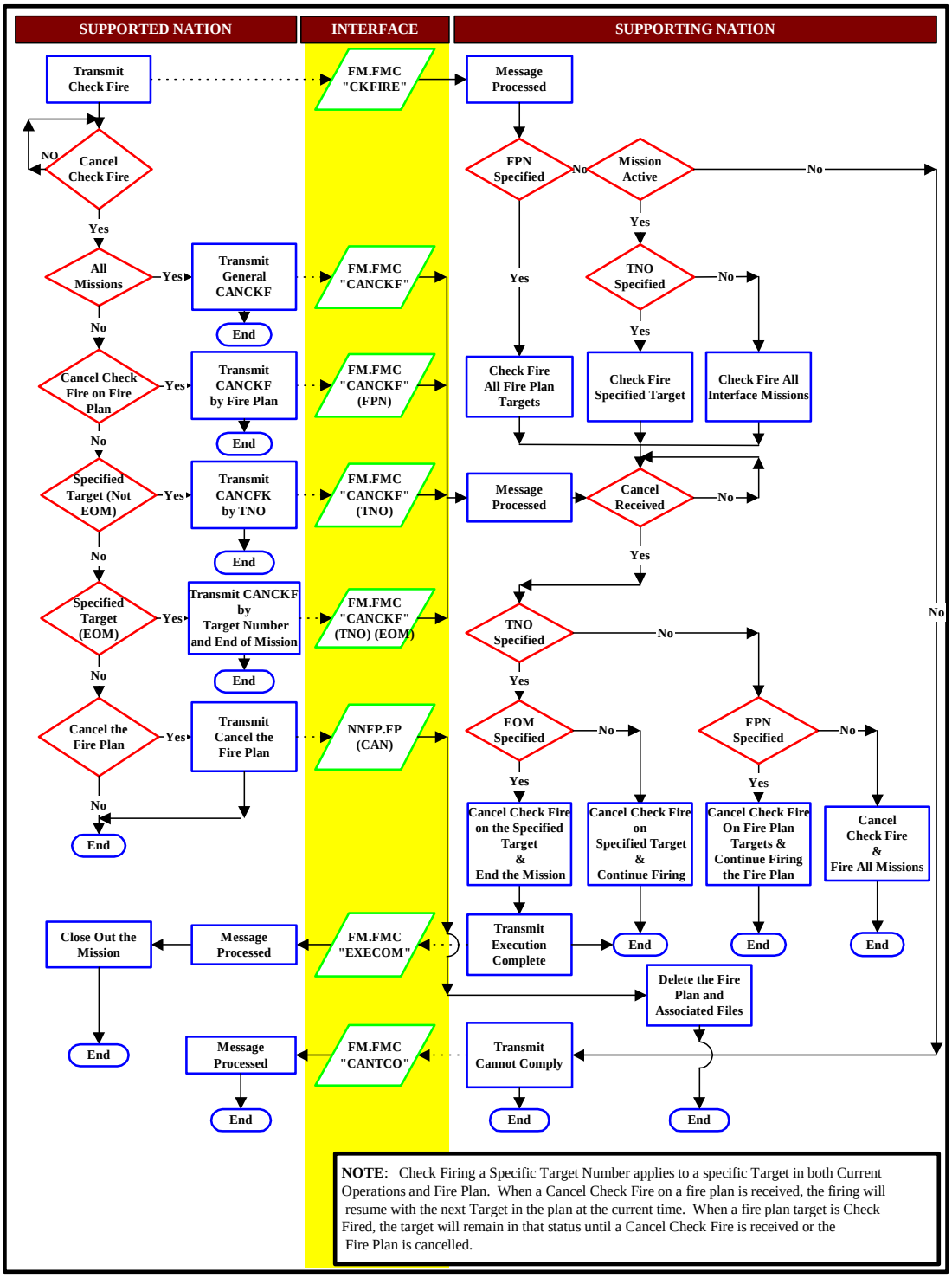


Figure 14. Check Fire Processing

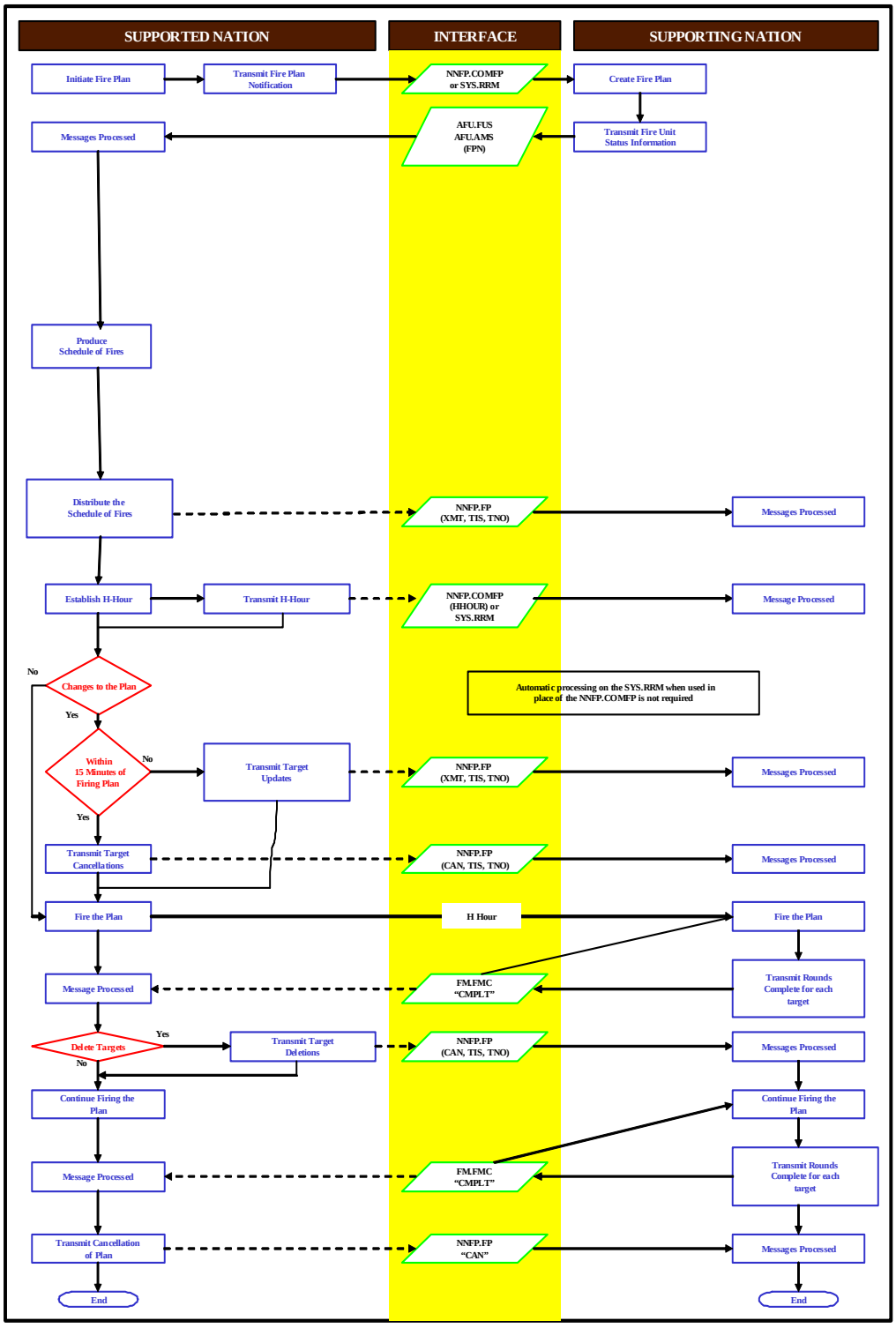


Figure 15. Fire Plan Processing

4. Message Formats and Procedures

4.1 Purpose

The purpose of this section is to define the rules for message construction, present the formats for character oriented messages, provide special instructions associated with each message, and gives procedures for processing the messages.

4.2 General

This section consists of the following:

a. Rules for the construction and processing of messages.

b. Message Formats containing the following paragraphs:

1) Purpose - Defines the purpose of the message.

2) Message Content - Contains the message format with the following:

a) Set Identification and Number of Iterations

b) Occurrence Category of Each Set Identifier and Field

c) Field Number - Number of Fields within each Set Identifier

d) Field Use Designator - Name of each Set Identifier and Field within the Set

e) Entry Length - Number and type of characters within the field

f) Field Map - Number of character positions in each field

3) Set and Field Definitions - Provides the definition of each field within the set and defines the legal entries.

4) Message Processing - Provides the Cases and Conditions, if any, for the use of the message.

5) Expected Response - Describes the response, if any, desired by the message originator.

6) Special Considerations - Provides additional information and/or a more detailed description of occurring events describing the use of the message or related messages.

c. Legal Entries Tables for legal entries containing data too numerous to define with the message text.

4.3 Message Purpose

This paragraph provides the definition of each purpose for the message. Depending on the use of the message, it can be used to provide a block transmission of several related messages, to transmit a single message, or to delete the entire contents of a previously transmitted message or specific data within a previously transmitted message. A message may also have a multi-purpose depending on the originator of the message (See paragraph **Error! Reference source not found.**).

4.4 Message Content

The columns of the message content are described as follows:

4.4.1 Set Identifier and Number of Iterations

Each Set Identifier consists of a mnemonic to provide a short code defining the data within the set. All iterations need not be present; however, a blank iteration shall not precede a filled iteration. The set terminator, semicolon (;), shall be specified following the last filled iteration.

4.4.2 Occurrence Category

Occurrence Category. This column defines whether the occurrence of the set within a message is Mandatory (M), Conditional (C), or Optional (O) for the Set and the Fields within the Set.

Set Identifier

a. **Mandatory** - Indicates that the Set Identifier shall be present each and every time the message is transmitted.
b. **Conditional** - Indicates that the occurrence of the Set Identifier is conditional, based on the selection of another Set Identifier or an entry in another Set Identifier or Data Field.
c. **Optional** - Indicates that the use of the Set Identifier is optional and it may or may not be present each time the message is transmitted.

Data Field

a. **Mandatory** - Indicates that the Data Field shall be specified each and every time the Set Identifier in which it is defined is transmitted.
b. **Conditional** - Indicates that the occurrence of the Data Field is conditional, based on the selection of another Data Field, Set Identifier, or an entry in another Data Field or Set Identifier.
c. **Optional** - Indicates that the use of the Data Field is optional and may or may not be specified each time the message is transmitted.

If a Set is optional and contains only one data field, then that data field shall be mandatory if the Set is selected.
If a Set contains more than one data field, then those data fields may be Mandatory, Conditional or Optional as defined in the set and field definitions and message processing paragraphs.

4.4.3 Field Number

This column contains the number of the data field within the set.

4.4.4 Field Use Designator

This column provides the definition for each Set Identifier mnemonic and provides the textual description of each field within the set.

4.4.5 Entry Length

The entry length defines the total number of characters depicted in the Field Map column and defines the length of the field to be transmitted using the following conventions:

Single Numeric

A single numeric entry (e.g., the "3" in 3N, or "10" in 10X) defines the number of non-blank character positions to be entered in the field; a dual numeric entry (e.g.., "1-3" in 1-3N, or "3-6X" in 3-6X) defines the minimum and the maximum number of non-blank character positions to be entered in the field.

Single Alphabetic

A single alphabetic character follows the numeric value of the entry length as follows:

A Alphabetic characters.
N Numeric characters.
X Alphabetic, numeric, special or blank characters.
B Blank character (space).

S Special characters which are , . ( ) ?/ : Plus % *+-; [2]
- (Hyphen) Normally used as an indication that no data is available.

Multiple Character
Multiple character usage (e.g., the "SNN" in SNN) defines the positional occurrence of special characters by type.

4.5 Set and Field Definitions

Special instructions associated with each message follow the message format. These instructions provide the details for each message in defining the field within a data set, explain the occurrence of sets and fields, provide the definition of each field and the legal entries and ranges. When the legal entries are too numerous to define, reference is made to a Legal Entry table. These special instructions and the information provided in message processing will provide sufficient information for the system designer to implement the message.

4.5.1 Tables

Following the messages are numerous tables designed to assist the user of this document. These tables contain legal entries for data fields that are too numerous or too lengthy to define in the Set and Field Definitions for the use of a message. A comment in the Set and Field Definitions will refer the user to the specific legal entry table.

DESCRIPTION	CHARACTER	HEX CODE
Space		20
Percent	%	25
Open Parenthesis	(	28
Closed Parenthesis	)	29
Asterisk	*	2A
Plus Sign	+	2B
Comma	,	2C
Hyphen (Minus Sign)	-	2D
Period (Full Stop)	.	2E
Slash	/	2F
Colon	:	3A
Semicolon	;	3B
Question Mark	?	3F

Table 16. Special Characters

4.6 Message Processing

These procedures define how systems are expected to process messages, which include message validation, handling of errors, legal entries, etc. Specific processing procedures for each message are contained following the Set And Field Definitions. This document does not dictate national doctrine or procedures; therefore, where doctrinal or procedural differences exist, the processing will be in accordance with national procedures as stated in the Message Processing and Special

[2] **Additional Special Characters** The following additional special characters are required by the Arty WG IER panel for use in free text fields: Percentage, (%) , Asterix(*) , Plus(+), Hyphen/Minus(-) and semi-colon(;). The NSA LOWG are requested to recommend APP11 is amended accordingly.

Considerations for each message. General message processing procedures for all messages are defined in the following paragraphs.

4.6.1 Cases

Case Statements are design-to requirements. There must be at least two cases and only one case at a time shall be valid. The use of Case statements in this document are limited to the number of purposes of the message. A message, i.e., MET.CM, which has only one purpose will not have a Case statement. The AFU.FUS message can be used to transmit or delete a single fire unit, or all fire units for current or planned operations; therefore, it has four Case statements of which only one case is valid, depending upon the purpose for which it is used.

Case Format a

The format used is as follows:

CASE: Add Data
THIS CASE REQUIRES
First required data
AND Specified Data
AND Specified Data
AND NOT Specified Data
END CASE

a. The first required data, in most cases, is the entry specified in Field 1 of Set OPT (Option).
b. The AND data is mandatory data and/or data essential for processing the message.
c. The AND NOT data is data that is not required for essential processing, or data that cannot be included in the Case because it is Conditional data based upon other data being present, or the absence of other data (this data will be specified in the Conditional statements.)
d. A Case Statement may also include an exclusive OR statement, which in this TIDP is the use of Set FPN (Fire Plan Name) as follows:
e. Case Statements shall not identify optional fields.

Case Format b

CASE: Add Data
THIS CASE REQUIRES
First Required Data
AND Specified Data
AND NOT Set FPN

OR First Required Data
AND Specified Data
AND Set FPN
AND Specified Data
END CASE

a. In this case, the data specified in the first part of the case statement is for current operations, which will preclude an entry in Set FPN.
b. The data following the exclusive OR is the entry in Field 1 of Set OPT followed by the specified data, including the fire plan name specified by Set FPN.

The following is an example of a Case Statement.
CASE: Transmit Status For Current Operations
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified "XMT" (Transmit)
AND Set UNT
AND Set DTG
AND Set UST
AND Set GRID
AND Set GZE
AND NOT Set FPN
END CASE

4.6.2 Conditions

The Conditionality statements define the conditions under which a data field, or a value in a data field, may be used as dictated by usage of one or more other data fields. The Condition statement is very structured in its use and for a specified condition, its opposite condition shall also be expressed. The format for a condition is as follows:

IF (Condition)
THEN (Data)
ELSE (Data)
ENDIF
IF (Condition)
AND (Data)
THEN (Process Data)
ELSE (Data)
OR (Condition)
ENDIF

Most conditions can be of simple construct such as IF, THEN, ELSE, ENDIF, or the condition specified may be dependent on an entry in another data field.
Some conditions are more complex, and may need several statements to complete the condition; therefore, an exclusive OR may be required.
When multiple messages of the same type must be used in order to complete the transmission of data, then a condition may be created. Some conditions require the use of an inclusive OR written as “AND/OR”.

4.7 Message Receipt

Upon receipt of a message, the receiving system shall first determine if the message is legal for receipt, whether all mandatory sets are present, whether all occurrence categories are met, and whether all entries are legal. This receipt processing is required for each received message, unless otherwise agreed to and is so stated in the message processing paragraph for each message. It is the responsibility of the receiving system to apply default values in those fields unspecified by the transmitting system. If an error is detected, an error response shall be output and transmitted to the transmitting system as defined in message processing.

4.8 Error Response

When an error is detected in a received message, the receiving system shall terminate processing and then generate a System Reply or Remarks Message (SYS.RRM) to the originator. The message processing paragraph of each message specifies the error conditions in detail. The SYS.RRM error response message shall be generated under the following conditions.

a. Situations that shall cause a message to be rejected for technical reasons are:
IF a message type is not defined
OR a message contains undefined sets
OR a message contains duplicate sets
OR a message contains sets with additional fields
OR a message contains sets with fields that have an illegal length
OR any field contains an illegal entry
OR a mandatory set is not specified
OR data is present that precludes the identification of the active Case Statement
OR the requirements of the Condition Statements appropriate to the active Case Statement are not met
OR the requirements of the Special Consideration Statements appropriate to the active Case Statement are not met
THEN The receiving system shall reject the message
AND Return to the originator of the message a SYS.RRM with Set REPLY specified "VER" (Verify) or "NON" (Execution Impossible)
AND Set RMKS specified with identification of the errors found. If an error code is transmitted then the error code “TEC” (Technical Error) shall be applied.
ENDIF

b. Situations that shall cause a message to be rejected for reasons of differing implementations are:
If a message type is not implemented
OR a set is not implemented
OR an entry to a field is not implemented
THEN The receiving system shall reject the message
AND Return to the originator of the message a SYS.RRM with Set REPLY specified “VER” (Verify) or “NON” (Execution Impossible)
AND Set RMKS specified with identification of the errors found. If an error code is transmitted the error code “NOT” (Not Implemented) shall be applied
ENDIF

c. Situations that shall cause a message to be rejected for reasons of operational applicability are:
IF the receiving system determines that a set or field contains a legal but invalid value (e.g., a specified grid location is determined to be completely erroneous when compared to the established area of operations; i.e. wrong grid zone, or specifies a fire plan that does not exist, etc.),
THEN The receiving system shall reject the message
AND Return to the originator of the message a SYS.RRM with Set REPLY specified “VER” (Verify) or “NON” (Execution Impossible)
AND Set RMKS specified with identification of the errors found. If an error code is transmitted then the error code “BAD” (Invalid Entry) shall be applied.
ENDIF

If no error exists in the received message, the processing required by the receiving system shall be as defined in the message processing instructions for each message format.

4.9 Message Control

The following are message constraints:

4.9.1 Set Identifier Option (Set OPT)

Some of the messages require the use of Set Identifier Option (Set OPT) which contains two fields, (Primary Option and Secondary Option). The Secondary Option shall NOT be specified, except in specific cases as defined in the Set And Field Definitions. The method of transmitting these messages and the interpretation by the receiving system is dependent upon the entry in Field 1 (Primary Option) of Set OPT and shall use the following conventions:

Transmission
Transmission is defined as establishing or replacing an existing data record. These messages contain data base information for the fire unit, its ammunition, battlefield geometry, artillery target intelligence data, and fire plan targets. When outputting a Transmission, the transmitting system shall insert "XMT" in Field 1 (Primary Option) of Set OPT (Option) of each transmitted message. The receiving system shall process each message containing data to be added to the database. If the information contained in the messages already exists, then the receiving system shall completely refresh the previous information, replacing it with the new information in current operations, or if Set FPN is specified, the specified fire plan.

Deleting Information.
Information that already exists may be cancelled in its entirety. The transmitting system shall specify "CAN" (Cancel) in Field 1 of Set OPT. If the data did not previously exist, then the receiving system shall reject the message and return a SYS.RRM to the message originator with Set REPLY specified "NON" (Execution Impossible) and Set RMKS specifying the nature of the error. When Field 1 of Set OPT is specified "CAN" and Set FPN is specified, the information shall be deleted from the specified fire plan and shall not affect current operations; likewise, if the data to be deleted is in current operations, then the data to be deleted shall not affect an established fire plan.

Iterative Sets
Data sets that are iterative shall be filled so that a blank iteration shall not precede a filled iteration.

4.9.2 Transmit Fire Plan Targets

To complete the transmission of fire plan targets in the Fire Plan Target List (FPL) or Targets in the Schedule of Fires (TIS), the transmitting system shall specify Field 2 (Secondary Option) of Set OPT (Option) as "LST" (Last Target). The receiving system will then know that the last target in the fire plan has been received and shall process the target list in accordance with national procedures.

4.9.3 Universal Transverse Mercator Grid System

The Universal Transverse Mercator (UTM) Grid System shall be the only coordinate used in all messages on these interfaces. WGS84 is the preferred datum option.

4.9.4 Normal Response

The normal response expected by the message originator is specified in each message format.

4.10 Message Usage

The following information is provided to assist the software developer in understanding the use of the messages in this document across an interface. The messages below are listed in alphabetical order, not as they will normally be used across any given interface. These messages will be exchanged after the interface has been connected.

4.10.1 Active Mission

A fire mission is considered active across the interface from the transmission of the initial Call for Fire (FM.CFF) by the Supported Nation, unless the FM.CFF is rejected due to a formatting error, illegal entries, or for any other reason. This means that the Supporting Nation shall be prepared to accept FM.FMC and FM.SUB messages directed at the Target Number specified in the initial Call for Fire. The Fire mission shall remain active until either:

a. The mission has been fired, or cancelled by the Supported Nation at any time prior to completion, and an FM.FMC specified "EXECOM" has been transmitted to the Supported Nation. Or

b. The initial Call for Fire (FM.CFF) has been rejected and an FM.FMC specified "CANTCO" has been transmitted to the Supported Nation. National doctrine or system processing may result in an initial Call for Fire remaining in queue for an indefinite period of time prior to a determination of acceptance of the mission. This would mean that it is possible for a mission to be refused after a considerable period of time.

The transmission by the Supporting Nation of an FM.FMC specified "CANTCO" in response to an FM.SUB modification to the mission shall not remove the "active" status of the mission. The Supported Nation can continue to modify the mission after receiving a "CANTCO".
A mission that has been placed in a Check Fire or Cease Loading status shall remain in an "active" status.

4.10.2 Current Operations.

The following messages are necessary to provide artillery support or operational support in order to perform fire mission processing during current operations.

a. **AFU.FUS**. The Fire Unit Status message will create the fire unit record and will be transmitted by each nation when providing support. This message will only be transmitted by the supporting nation to the supported nation.

b. **AFU.AMS**. The Ammunition Status message will be used to establish an ammunition record for the fire unit established by the AFU.FUS. This message will be rejected if an AFU.FUS has not previously established the fire unit. If the fire unit has been deleted, then the ammunition record for that unit shall also be deleted. The conditions for transmitting this message are the same as for the AFU.FUS.

c. **SPRT.GEOM**. Battlefield Geometry consisting of fire support coordination measures are transmitted by both nations in support or by the supported nation to the supporting nation as they are developed or changed. These measures are established by the maneuver force commander and contained in the operations order.

d. **SPRT.ACA**. Airspace Coordination Areas establish air corridors for friendly aircraft for which artillery fires must be coordinated prior to firing through them.

ACAs are established and transmitted under the same conditions as the SPRT.GEOM.

e. **MET.CM.** Computer Meteorological data is transmitted to either nation requiring it as needed. The data is used in the processing of ballistic data in fire mission processing.

f. **FM.CFF**. The Call For Fire message is transmitted between both nations providing support. In a supporting role, it will only be transmitted by the supported nation to the supporting nation. This message is used only during current operations to provide fires on a target of opportunity.

g. **FM.MTO**. The Message to Observer is transmitted by the nation processing the Call For Fire to the supported nation. It contains the information necessary for the forward observer concerning the volume and type of support he will receive on the target. This message is used only in current operations on a target of opportunity.
NOTE: As soon as the mission allotment process has been completed, a consolidated FM.MTO message shall be generated and transmitted to the mission originator, without operator intervention whenever possible. The message should reach the mission originator before firing commences.

h. **FM.SUB.** The Subsequent Adjust message is transmitted by the observer to his national system only if additional fires are requested on the target, either to neutralize the target or to shift the fire. The national system receiving the observer's subsequent adjust will transmit to the supporting nation an FM.SUB, either a request to Repeat Fire For Effect or provide an adjusted target location for continuation of fire. This message may also be used by the observer to end the mission. This message is used only in current operations on a target of opportunity.

i. **FM.FMC**. The Fire Mission Command message is used by the observer to command a check fire or cease loading on an active fire mission and to cancel such commands. It is also used by the supporting nation to pass information to the observer. This message can be used by the observer to cancel a check fire and end the mission. This message may be used for current operations on a target of opportunity or for a fire plan target. This message is also used to indicate that a fire mission has been completed or cannot be fired
NOTE: Every FM.FMC fire mission report shall be consolidated and transmitted from the originator of the report to the mission originator, without operator intervention whenever possible, as soon as the necessary information is available. Every FM.FMC fire mission command should be transmitted from the originator of the command to the weapon platforms allotted to the mission without operator intervention whenever possible.

4.10.3 Fire Planning Operations

The following messages are used when performing fire planning. Each nation will perform its own fire planning, but may request fire from each other.

a. **AFU.FUS**. The Fire Unit Status message is used in fire planning in order to establish the specified fire unit in the fire plan. If the fire unit is not assigned to the fire plan, then the related fire plan messages cannot be processed. Assigning the fire

unit to a fire plan will have no effect on the fire unit processing a call for fire on a target of opportunity.

b. **AFU.AMS**. The Ammunition Status message is used to reserve munitions for the specified fire plan. These munitions will not be used to process a call for fire on a target of opportunity. If munitions are not reserved for the fire plan, then the related fire plan messages cannot be processed. If the fire unit has not been assigned to the fire plan, then this message will be rejected.

c. **SPRT.GEOM**. Battlefield Geometry may be established for a fire plan, and is transmitted from the supported to the supporting nation. The measures specified for the fire plan will not affect the coordination measures established for current operations.

d. **SPRT.ACA.** Air Space Coordination Areas may be established for a fire plan, and is transmitted by the supported to the supporting nation. ACAs for a fire plan will not affect ACAs established for current operations.

e. **NNFP.FP.** The Fire Plan message is used to input a target and/or orders into the fire plan. It may be a target to be fired once, or multiple times relative to the start of the fire plan. The target may be placed in a group of targets within the plan. The orders may specify the fire unit(s) to fire, the type of munitions to be fired, and the volume of fire.
NOTE: The NNFP.FP is the element that makes up an artillery fire plan. They are entered into one of two target lists: Fire Plan List or the Targets in the Schedule of Fires. All targets may initially be placed in the FPL and transmitted by the supported nation to the supporting nation for resolution of any conflicts. After all conflicts are resolved, the targets are placed in the Schedule of Fires.

f. **NNFP.COMFP**. The Compute Fire Plan message is transmitted from the supported to the supporting nation; it will contain the H-Hour of the fire plan and may be used to execute the fire plan. It is used to establish the Fire Plan.

g. **FM.FMC**. The Fire Mission Command message may be transmitted by either nation and is used to order check firing or cease loading on a specific target or all targets in the fire plan. It is also used to indicate that firing has been completed on a target.

Active Fire Plan. A fire plan is considered to be active across the interface from the time that the NNFP.COMFP or SYS.RRM message to establish the plan is accepted and the fire plan created by the receiving nation's system until the NNFP.FP message to cancel the plan is accepted by the receiving nation.

Active Fire Plan Target. A fire plan target is considered to be active across the interface from the time that the first NNFP.FP message which specifies the target number is accepted by the receiving nation until all instances of the target that are contained in the plan have been either:

1) Fired (only in the case of instances of the target that occur in the Schedule of Fires).
or
2) Cancelled by any valid mechanism prescribed by the FM.FMC, NNFP.COMFP, and NNFP.FP message definitions (including cancellation of the fire plan).

4.10.4 Miscellaneous

The following messages are transmitted by each nation on an as needed basis.

a. **AFU.DCMD.** The Deployment Command message is transmitted by the supported nation to the supporting nation. The message will direct the fire unit to move to a specific or general location, or direct the location and time of a liaison meeting.

b. **ATI.ATR.** The Artillery Target Report message is transmitted by either nation for information purposes or to generate an immediate call for fire based on target intelligence data. This message is also transmitted as a result of a Standing Request for Information (SRI) based upon target type, size, or search location; or as the result of an Artillery Target Query (ATQ), which is a one-time request for target information.

c. **ATI.TIR**. The Target Information Request message is used to establish an SRI or an ATQ. When received, the receiving system shall transmit the target information requested in the form of an ATI.ATR, or if the request is a one time query for a count of targets by type, then a SYS.RRM will be transmitted to the requester with the number of targets meeting the category. The ATI.TIR is normally used for fire planning purposes.

d. **SYS.RRM**. The Reply or Remarks Message is used to provide amplifying remarks where insufficient information is available in a message format. The message is also used when a transmitted message is received and cannot be processed due to a syntax failure, an incomplete message, or if the message is understood but cannot be complied.

e. **SYS.RFR**. The Request For Report message is used to request a status at periodic intervals, request a target list in a fire plan, and battlefield geometry updates. Upon receipt, the receiving system will generate and transmit the requested report.

f. **MET.TA**. The MET.TA meteorological data is transmitted under the same conditions as the MET.CM.

g. **MET.RFM**. The Request For MET message is used if either nation is supporting the other with meteorological data. The requesting nation will specify the type of support required along with the frequency of sending the MET data.

5. AFU.AMS

5.1 General

Artillery Fire Unit Ammunition Status. This message will be used to establish or delete an ammunition status for a fire unit in current or planned operations.

5.2 Message Content

Ser	Set ID	Set OCC	Fld OCC	Fld No	Field Title	Field Length
A	MSGID	M			MESSAGE IDENTIFICATION	
			M	1	Message Type	7X
			M	2	Originator	13X[3]
B	OPT	M			OPTION	
			M	1	Primary Option	3A
			C[4]	2	Secondary Option	3A
C	UNT	M			FIRE UNIT	
			O	1	Section/Team	1ANB
			O	2	Platoon	1ANB
			M	3	Battery/Company	1ANB
			M	4	Battalion/Regiment	1-3ANB
			M	5	Regiment/Brigade/ Division	1-3ANB
D	DTG	M			DATE-TIME	
			M	1	Date-Time Group	6N
E	FPN	O			FIRE PLAN NAME	
			M	1	Fire Plan Name	1-6AN
F	PRJ	C			PROJECTILES	
			M	1	Projectile Type	3X
			M	2	Number of Projectiles	1-4N
G	PRP	C			PROPELLANTS	
			M	1	Propellant Type	5A
			M	2	Number of Propellants	1-4N
H	FZE	C			FUZES	
			M	1	Fuze Type	2-4A
			M	2	Number of Fuzes	1-4N

5.3 Set and Field Definitions.

5.3.1 Set Identifier: MSGID (M) (Message Identification)

Field 1 - Message Type (M). Seven (7) characters used to specify the message type. Legal entry:

AFU.AMS.

Field 2 - Originator (M). Thirteen (13) characters used to specify the logical name of the message originator. Legal entries:

[3] 13 Characters are used - see ser C.

[4] FIELD 2 IN SET B (OPT) IS PROHIBITED IF FIELD 1 IN SET A (MSGID) EQUALS "AFU.AMS".

Digits: 0 to 9
Letters: A to Z
Special Character : Period (.)
Blank character (Hex 20).

The period is only valid in the second, fourth, sixth, and tenth character positions, and shall always be present in those character positions.

5.3.2 Set Identifier: OPT (M) (Option)

Field 1 - Primary Option (M). Three (3) letters used to specify the primary option to be taken. Legal entries:

CAN - Cancel
XMT - Transmit.

Field 2 - Secondary Option (C). This field shall not be specified in this message.

5.3.3 Set Identifier: UNT (M) (Fire Unit)

Field 1 - Section (O). One (1) character used to specify the section identification. Legal entries:

Digits: 0 to 9
Letters: A to Z
Space (Hex 20).

Field 2 - Platoon (O). One (1) character used to specify the platoon identification. Legal entries:

Digits: 0 to 9
Letters: A to Z
Space (Hex 20).

Field 3 - Battery/Company (M). One (1) character used to specify the battery/company designator. Legal entries:

Digits: 0 to 9
Letters: A to Z.

Field 4 - Battalion/Regiment (M). One (1) to three (3) characters used to specify the battalion/regiment identification. Legal entries:

Digits: 0 to 9
Letters: A to Z
Space (Hex 20).

Field 5 - Regiment/Brigade/Division (M). One (1) to three (3) characters used to specify the regiment/brigade/division identification. Legal entries:

Digits: 0 to 9
Letters: A to Z
Space (Hex 20).

5.3.4 Set Identifier: DTG (M) (Date-Time)

Field 1 - Date-Time Group (M). Six (6) digits used to specify the ZULU date-time of the message. The first two (2) digits represent the day of the month, the next two (2) digits, the hour of the day, and the final two (2) digits, the minutes of the hour. Legal entries:

Day: 01 to 31

Hour: 00 to 23
Minutes: 00 to 59.

5.3.5 Set Identifier: FPN (O) (Fire Plan Name)

Field 1 - Fire Plan Name (M). One (1) to six (6) characters used to specify the name of the fire plan to which the information relates. Legal entries:

Digits: 0 to 9
Letters: A to Z.

5.3.6 Set Identifier: PRJ (C) (Projectiles)

Field 1 - Projectile Type (M). Three (3) characters used to specify the projectile type. See Legal Entries Table 22. Legal Entries for Fire Support Ammunition for the codes

Field 2 - Number of Projectiles (M). One (1) to four (4) digits used to specify the quantity of projectiles on-hand in the fire unit for the type specified in Field 1. Legal entries:

1 to 9999.

NOTE: Fields 1 and 2 may be repeated as a group up to six (6) times, initial plus five (5).

5.3.7 Set Identifier: PRP (C) (Propellants)

Field 1 - Propellant Type (M). Five (5) letters used to specify the propellant type. See Legal Entries Table 22. Legal Entries for Fire Support Ammunition for the codes.

Field 2 - Number of Propellants (M). One (1) to four (4) digits used to specify the quantity of propellants on-hand in the fire unit for the type specified in Field 1. Legal entries:

1 to 9999.

NOTE: Fields 1 and 2 may be repeated as a group up to three (3) times, initial plus two (2).

5.3.8 Set Identifier: FZE (C) (Fuzes)

Field 1 - Fuze Type (M). Two (2) to four (4) letters used to specify the fuze type. See Table 22. Legal Entries for Fire Support Ammunition, for the codes.

Field 2 - Number of Fuzes (M). One (1) to four (4) digits used to specify the quantity of fuzes on-hand in the fire unit for the type specified in Field 1. Legal entries:

1 to 9999.

NOTE: Fields 1 and 2 may be repeated as a group up to six (6) times, initial plus five (5).

5.4 Message Processing

5.4.1 Cases

CASE: Transmit All Ammunition For Current Operations

THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified "XMT" (Transmit)
AND Set UNT
AND Set DTG
AND NOT Set FPN
AND At least one of Sets PRJ, PRP, and FZE
END CASE

CASE: Transmit Ammunition For A Fire Plan

THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option specified "XMT" (Transmit)

AND Set FPN
AND Set UNT
AND Set DTG
AND At least one of Sets PRJ, PRP, and FZE
END CASE

CASE: Delete All Ammunition For Current Operations
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified "CAN" (Cancel)
AND Set UNT
AND Set DTG
AND NOT Set FPN
AND NOT Set PRJ
AND NOT Set PRP
AND NOT Set FZE
END CASE

CASE: Delete Fire Plan Ammunition
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified "CAN" (Cancel)
AND Set FPN
AND Set UNT
AND Set DTG
AND NOT Set PRJ
AND NOT Set PRP
AND NOT Set FZE
END CASE

5.4.2 Conditions

IF Field 1 (Primary Option) of Set OPT (Option) is specified "XMT" (Transmit)
THEN One or more of Sets PRJ, PRP, or FZE shall be specified
ENDIF

IF Field 1 (Projectile Type) of the first iteration of Set PRJ (Projectiles) is specified with an MLRS ammunition code according to Table 22. Legal Entries for Fire Support Ammunition,
THEN Field 1 of the other iterations of Set PRJ may only be specified with an MLRS ammunition code according to Table 22. Legal Entries for Fire Support Ammunition
AND Set PRP shall NOT be specified
AND Set FZE shall NOT be specified
ELSE Field 1 of the iterations of Set PRJ may only be specified with a gun ammunition code according to Table 22. Legal Entries for Fire Support Ammunition
ENDIF

5.5 Expected Response

5.5.1 No response is expected by the AFU.AMS originator.

5.6 Special Considerations

5.6.1 IF Field 1 (Primary Option) of Set OPT (Option) is specified "XMT" (Transmit)
THEN The message specifies in full the current ammunition status record for the specified fire unit
AND All ammunition data previously established in any existing record for the specified fire unit shall be deleted
ENDIF

5.6.2 IF Field 1 (Primary Option) of Set (Option) is specified “CAN” (Cancel)
THEN All ammunition data for the specified fire unit shall be deleted
ENDIF

5.6.3 IF fire unit does NOT exist (AFU.FUS)
THEN The message will be rejected
ENDIF

5.6.4 IF Set FPN (Fire Plan Name) is specified
AND The fire plan specified by Set FPN does NOT exist
THEN The message will be rejected
ENDIF

5.6.5 IF Set FPN (Fire Plan Name) is specified
AND The specified fire unit is NOT assigned to the specified fire plan
THEN The message will be rejected
ENDIF

5.6.6 IF Field 1 (Projectile Type) of the first iteration of Set PRJ (Projectiles) is specified with an MLRS ammunition code according to Table 22. Legal Entries for Fire Support Ammunition
AND The unit specified by Set UNT (Fire Unit) is NOT an MLRS unit (according to Set WPN in the related AFU.FUS message)
OR Field 1 of the first iteration of Set PRJ (Projectiles) is specified with a gun ammunition code according to Table 22. Legal Entries for Fire Support Ammunition.
AND The unit specified by Set UNT (Fire Unit) is NOT a GUN unit (according to Set WPN in the related AFU.FUS message)
THEN The message shall be rejected
AND A SYS.RRM shall be returned to the message originator with Set REPLY specified “VER” (Verify)
ENDIF

5.6.7 IF Field 1 (Projectile Type) of any iteration of Set PRJ (Projectiles) is specified
THEN NO other iteration of Field 1 shall be specified with the same projectile code
ELSE The message shall be rejected and a SYS.RRM shall be returned to the message originator with Set REPLY specified 'VER' (Verify)
ENDIF

5.6.8 IF Field 1 (Fuze Type) of any iteration of Set FZE (Fuzes) is specified

THEN NO other iteration of Field 1 shall be specified with the same fuze code

ELSE The message shall be rejected and a SYS.RRM shall be returned to the message originator with Set REPLY specified 'VER' (Verify)

ENDIF

5.6.9 IF Field 1 (Propellant Type) of any iteration of Set PRP (Propellants) is specified

THEN NO other iteration of Field 1 shall be specified with the same propellant code

ELSE The message shall be rejected and a SYS.RRM shall be returned to the message originator with Set REPLY specified 'VER' (Verify)

ENDIF

6. AFU.DCMD

6.1 General

This message will be used to transmit assignments and changes thereto, pre-planned fire positions, and movement orders for battalion, regiment, or fire units.

6.2 Message Content

Ser	Set ID	Set OCC	Fld OCC	Fld No	Field Title	Field Length
A	MSGID	M			MESSAGE IDENTIFICATION	
			M	1	Message Type	8X
			M	2	Originator	13X
B	OPT	M			OPTION	
			M	1	Primary Option	3A
			C[5]	2	Secondary Option	3A
C	ORDNAM	M			ORDER NAME	
			M	1	Order Name	1-6ANB
D	UNT	C			FIRE UNIT	
			O	1	Section/Team	1ANB
			O	2	Platoon	1ANB
			O	3	Battery/Company	1ANB
			M	4	Battalion/Regiment	1-3ANB
			M	5	Regiment/Brigade/ Division	1-3ANB
E	LSNLOC	C			LIAISON LOCATION	
			M	1	UTM Easting	6N
			M	2	UTM Northing	1-8N[6]
			M	3	Grid Zone	1-3NS
F	LSNDTG	C			LIAISON TIME	
			M	1	Date-Time of Liaison	6N
G	FUMSN	O			TACTICAL FIRE UNIT MISSION	
			M	1	Tactical Fire Unit Mission	1-3A
			O	2	Zone of Fire	1-6AN
H	MSNDTG	C			MISSION TIME	
			M	1	Date-Time of Mission Assignment	6N
			O	2	Date-Time of Mission Termination	6N
I	FSP	O			MANEUVER UNIT SUPPORTED	
			O	1	Battery/Company	1ANB
			O	2	Battalion/Regiment	1-3ANB
			M	3	Regiment/Brigade/Division	1-3ANB
J	UNR	O			ARTILLERY UNIT REINFORCED	
			O	1	Battalion/Regiment	1-3ANB
			M	2	Regiment/Brigade/Division	1-3ANB
K	PNT	O			MOVE LOCATION OR ROUTE	
			M	1	Point Sequence Number	1-2N[7]

[5] FIELD 2 IN SET B (OPT) IS PROHIBITED IF FIELD 1 IN SET A (MSGID) EQUALS "AFU.DCMD".
[6] A northing 1m above the equator only requires 1 to be sent, not 00000001 for example.

			M	2	UTM Easting	6N
			M	3	UTM Northing	1-8N
L	GZE	C			GRID ZONE	
			M	1	Grid Zone	1-3NS
M	AZF	O			AZIMUTH OF FIRE	
			M	1	Azimuth of Fire	4N
N	MVTIM	O			MOVE TIME	
			O	1	Date-Time Movement to Start	6N
			O	2	Date-Time Movement to End	6N
O	SRMK	O			SPECIAL REMARKS	
			M	1	Plain Text	1-12X[8]

6.3 Set and Field Definitions

6.3.1 Set Identifier: MSGID (M) (Message Identification)

Field 1 - Message Type (M). Eight (8) characters used to specify the message type. Legal entry:

AFU.DCMD.

Field 2 - Originator (M). Thirteen (13) characters used to specify the logical name of the message originator. Legal entries:

Digits: 0 to 9
Letters: A to Z
Special Character : Period (.)
Blank character (Hex 20).

The period is only valid in the second, fourth, sixth, and tenth character positions, and shall always be present in those character positions.

6.3.2 Set Identifier: OPT (M) (Option)

Field 1 - Primary Option (M). Three (3) letters used to specify the primary option to be taken. Legal entries:

CAN - Cancel
XMT - Transmit.

Field 2 - Secondary Option (C). This field shall NOT be specified in this message.

6.3.3 Set Identifier: ORDNAM (M) (Order Name)

Field 1 - Order Name (M). One (1) to six (6) characters used to specify the name of the deployment command. Legal entries:

Digits: 0 to 9
Letters: A to Z
Space (Hex 20).

6.3.4 Set Identifier: UNT (C) (Fire Unit)

Field 1 - Section (O). One (1) character used to specify the section identification. Legal entries:

[7] To allow routes with more than 10 points to be exchanged,
[8] The semi-colon cannot be used in this field.

Digits: 0 to 9
Letters: A to Z
Space (Hex 20).

Field 2 - Platoon (O). One (1) character used to specify the platoon identification. Legal entries:
Digits: 0 to 9
Letters: A to Z
Space (Hex 20).

Field 3 - Battery/Company (O). One (1) character used to specify the battery/company identification. Legal entries:
Digits: 0 to 9
Letters: A to Z.

Field 4 - Battalion/Regiment (M). One (1) to three (3) characters used to specify the battalion/regiment identification. Legal entries:
Digits: 0 to 9
Letters: A to Z
Space (Hex 20).

Field 5 - Regiment/Brigade/Division (M). One (1) to three (3) characters used to specify the regiment/brigade/division identification. Legal entries:
Digits: 0 to 9
Letters: A to Z

6.3.5 Set Identifier: LSNLOC (C) (Liaison Location)

Field 1 - UTM Easting (M). Six (6) digits used to specify the higher order Easting of the liaison location in meters. Legal entries:
000000 to 999999.

Field 2 - UTM Northing (M). One (1) to eight (8) digits used to specify the higher order Northing of the liaison location in meters. Legal entries:
Northern Hemisphere: 0 to 10000000
Southern Hemisphere: 0 to 11000000.

Field 3 - Grid Zone (M). One (1) to three (3) characters used to specify the earth hemisphere and grid zone designator. One (1) or two (2) digits used to specify the grid zone at the location proceeded by one character used to specify the earth hemisphere. Grid zones in the southern hemisphere shall always be preceded by a minus (-) sign. Plus (+) is understood if a minus (-) is not specified. Legal entries:
Northern: 1 to 60
Southern: -1 to -60.

6.3.6 Set Identifier: LSNDTG (C) (Liaison Time)

Field 1 - Date-Time of Liaison (M). Six (6) digits used to specify the ZULU date-time that the liaison is to be affected. The first two (2) digits represent the day of the month, the second two (2) digits the hour of the day, and the final two (2) digits, the minutes of the hour. Legal entries:
Day: 01 to 31
Hour: 00 to 23

Minutes: 00 to 59.

6.3.7 Set Identifier: FUMSN (O) (Tactical Fire Unit Mission)

Field 1 - Tactical Fire Unit Mission (M). One (1) to three (3) letters used to specify the tactical mission assigned to the fire unit. Legal entries:

DS - Direct Support
GS - General Support
GSR - General Support Reinforcing
R - Reinforcing

Field 2 - Zone of Fire (O). One (1) to six (6) characters used to specify the name of the zone of fire (responsibility) for the fire unit. Legal entries:

Digits: 0 to 9
Letters: A to Z

6.3.8 Set Identifier: MSNDTG (C) (Mission Time)

Field 1 - Date-Time of Mission Assignment (M). Six (6) digits used to specify the effective ZULU date-time of the mission assignment. The first two (2) digits represent the day of the month, the second two (2) digits, the hour of the day, and the final two (2) digits, the minutes of the hour. Legal entries:

Day: 01 to 31
Hour: 00 to 23
Minutes: 00 to 59.

Field 2 - Date-Time of Mission Termination (O). Six (6) digits used to specify the effective ZULU date-time of the mission termination. The first two (2) digits represent the day of the month, the second two (2) digits, the hour of the day, and the final two (2) digits, the minutes of the hour. Legal entries:

Day: 01 to 31
Hour: 00 to 23
Minutes: 00 to 59.

6.3.9 Set Identifier: FSP (O). (Maneuver Unit Supported)

Field 1 - Battery/Company (O). One (1) character used to specify the battery/company identification. Legal entries:

Digits: 0 to 9
Letters: A to Z
Space (Hex 20).

Field 2 - Battalion/Regiment (O). One (1) to three (3) characters used to specify the battalion/regiment identification. Legal entries:

Digits: 0 to 9
Letters: A to Z
Space (Hex 20).

Field 3 - Regiment/Brigade/Division (M). One (1) to three (3) characters used to specify the regiment/brigade/division identification. Legal entries:

Digits: 0 to 9
Letters: A to Z
Space (Hex 20).

6.3.10 Set Identifier: UNR (O). (Artillery Unit Reinforced)

Field 1 - Battalion/Regiment (O). One (1) to three (3) characters used to specify the battalion/regiment identification. Legal entries:

Digits: 0 to 9
Letters: A to Z
Space (Hex 20).

Field 2 - Regiment/Brigade/Division (M). One (1) to three (3) characters used to specify the regiment/brigade/division identification. Legal entries:

Digits: 0 to 9
Letters: A to Z
Space (Hex 20).

6.3.11 Set Identifier: PNT (O). (Move Location or Route) A point, line, or area definition or movement route.

Field 1 - Point Sequence Number (M). One (1) to two (2) digits used to specify the point number of the location. Legal entries:

1 to 9.

Field 2 - UTM Easting (M). Six (6) digits used to specify the higher order Easting of the move location in meters. Legal entries:

000000 to 999999.

Field 3 - UTM Northing (M). One (1) to eight (8) digits used to specify the higher order Northing of the move location in meters. Legal entries:

Northern Hemisphere: 0 to 10000000
Southern Hemisphere: 0 to 11000000.

NOTE: Fields 1, 2, and 3 may be repeated as a group up to nine (9) times, initial plus eight (8).

6.3.12 Set Identifier: GZE (C). (Grid Zone)

Field 1 - Grid Zone (M). One (1) to three (3) characters used to specify the earth hemisphere and grid zone designator. One (1) or two (2) digits used to specify the grid zone at the location proceeded by one character used to specify the earth hemisphere. Grid zones in the southern hemisphere shall be preceded by a minus (-) sign. Plus (+) is understood if a minus (-) is not specified but may be entered. Legal entries:

Northern: 1 to 60
Southern: -1 to -60.

6.3.13 Set Identifier: AZF (O). (Azimuth of Fire)

Field 1 - Azimuth of Fire (M). Four (4) digits used to specify the fire unit azimuth of fire in mils measured from grid north. Legal entries:

0000 to 6399.

6.3.14 Set Identifier: MVTIM (O). (Move Time)

Field 1 - Date-Time Movement to Start (O). Six (6) digits used to specify the ZULU date-time movement is to start. The first two (2) digits represent the day of the month, the second two (2) digits, the hour of the day, and the final two (2) digits, the minutes of the hour. Legal entries:

Day: 01 to 31

Hour: 00 to 23
Minutes: 00 to 59.

Field 2 - Date-Time Movement to End (O). Six (6) digits used to specify the ZULU date-time the movement is to terminate. The first (2) digits represent the day of the month, the second two (2) digits, the hour of the day, and the final two (2) digits, the minutes of the hour. Legal entries:

Day: 01 to 31
Hour: 00 to 23
Minutes: 00 to 59.

6.3.15 Set Identifier: SRMK (O). (Special Remarks)

Field 1 - Plain Text (M). One (1) to twelve (12) characters used to compose plain text remarks as required. Legal entries:

Digits: 0 to 9
Letters: A to Z
Special characters, except the semicolon (;)
Blank character (HEX 20).

6.4 Message Processing

6.4.1 Cases

CASE: Transmit Liaison Assignments and Changes Thereto
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified "XMT" (Transmit)
AND Set ORDNAM
AND Set UNT
AND Set LSNLOC
AND Set LSNDTG
AND NOT Set FUMSN
AND NOT Set MSNDTG
AND NOT Set FSP
AND NOT Set UNR
AND NOT Set PNT
AND NOT Set GZE
AND NOT Set AZF
AND NOT Set MVTIM
END CASE

CASE: Transmit Move to Location and Changes Thereto
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified "XMT" (Transmit)
AND Set ORDNAM
AND Set UNT
AND Set PNT
AND Set GZE
AND Set AZF
AND Set MVTIM

AND NOT Set LSNLOC
AND NOT Set LSNDTG
END CASE

CASE: Transmit Movement Route and Changes Thereto
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified "XMT" (Transmit)
AND Set ORDNAM
AND Set UNT
AND Set PNT
AND Set GZE
AND Set MVTIM
AND NOT Set LSNLOC
AND NOT Set LSNDTG
AND NOT Set AZF
END CASE

CASE: Cancel Specific Deployment Commands
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified "CAN" (Cancel)
AND Set ORDNAM
AND NOT Set UNT
AND NOT Set LSNLOC
AND NOT Set LSNDTG
AND NOT Set FUMSN
AND NOT Set MSNDTG
AND NOT Set FSP
AND NOT Set UNR
AND NOT Set PNT
AND NOT Set GZE
AND NOT Set AZF
AND NOT Set MVTIM
END CASE

CASE: Cancel Specific Deployment Commands for a Specific Unit
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified "CAN" (Cancel)
AND Set ORDNAM
AND Set UNT
AND NOT Set LSNLOC
AND NOT Set LSNDTG
AND NOT Set FUMSN
AND NOT Set MSNDTG
AND NOT Set FSP
AND NOT Set UNR
AND NOT Set PNT
AND NOT Set GZE
AND NOT Set AZF
AND NOT Set MVTIM
END CASE

CASE: Transmit a Mission Assignment and Changes Thereto
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified "XMT" (Transmit)
AND Set ORDNAM
AND Set UNT
AND Set FUMSN
AND Set MSNDTG
AND NOT Set LSNLOC
AND NOT Set LSNDTG
AND NOT Set PNT
AND NOT Set GZE
AND NOT Set AZF
AND NOT Set MVTIM
END CASE

6.4.2 Conditions

IF Set PNT (Move Location) is specified
THEN Set GZE (Grid Zone) shall be specified
ENDIF

IF Set LSNDTG (Liaison Time) is specified
THEN Set LSNLOC (Liaison Location) shall be specified
ENDIF

IF Set LSNLOC (Liaison Location) is specified
THEN Set LSNDTG (Liaison Time) shall be specified
ENDIF

IF Set PNT (Move Location or Route is specified)
THEN Set LSNLOC (Liaison Location) shall NOT be specified
AND Set LSNDTG (Liaison Time) shall NOT be specified
ENDIF

IF Field 1 (Primary Option) of Set OPT (Option) is specified “XMT” (Transmit)
THEN Set UNT (Fire Unit) shall be specified
ENDIF

IF Set FUMSN (Tactical Fire Unit Mission) is NOT specified
THEN Set MSNDTG (Mission Time) shall NOT be specified
ENDIF

6.5 Expected Response

IF the action is NOT accepted
THEN A SYS.RRM shall be returned to the message originator with Set REPLY specified "NON" (Message understood; execution impossible)
OR A SYS.RRM returned to the message originator with Set REPLY specified "VER" (Message not understood; verification requested)

OR A SYS.RRM returned to the message originator with Set REPLY specified "EMD" (Message understood; execution must be modified)

IF the action is accepted
THEN A SYS.RRM shall be returned to the message originator with Set REPLY specified "WIL" (Message understood; execution guaranteed)
OR A SYS.RRM shall be returned to the message originator with Set REPLY specified "ACK" (Message understood; execution not yet guaranteed)
ENDIF

6.5.1 IF the action is executed
THEN A SYS.RRM message shall be returned to the message originator with Set REPLY specified “COM” (Execution of message completed)
ENDIF

6.5.2 IF Set PNT is specified
AND Set AZF is NOT specified
THEN Upon completion of movement the specified fire unit shall transmit an AFU.FUS to the DCMD originator
AND Transmit an AFU.AMS to the DCMD originator
ENDIF

6.6 Special Considerations

6.6.1 IF Set PNT (Move Location or Route) is specified
AND Set AZF (Azimuth of Fire) is NOT specified
THEN A movement route is being specified
ENDIF

6.6.2 IF Set PNT (Move Location or Route) is specified
AND Set AZF (Azimuth of Fire) is specified
THEN A movement to point, line, or area is being specified
AND The area boundary specified by Set PNT shall NOT contain any crossing segments
ENDIF

6.6.3 IF Set PNT (Move Location or Route) is specified
AND Set AZF (Azimuth of Fire) is NOT specified
THEN At least two (2) iterations of Set PNT shall be specified
ENDIF

6.6.4 IF Set PNT (Move Location or Route) is specified
THEN The points specified by Field 1 (Point Sequence Number) shall be sequential from lowest to highest
ENDIF

6.6.5 IF Set PNT (Move Location or Route) is specified
AND If more than 2 points are specified
AND Set AZF (Azimuth of Fire) is specified
THEN The last point specified shall be closed with the first point specified
ENDIF

7 AFU.FUS

7.1 General

7.1.1 This message will be used to establish or delete the status for fire units in current or planned operations for the purpose of making tactical fire control decisions.

7.2 Message Content

Ser	Set ID	Set OCC	Field OCC	Fld No	Field Title	Field Length
A	MSGID	M			MESSAGE IDENTIFICATION	
			M	1	Message Type	7X
			M	2	Originator	13X
B	OPT	M			OPTION	
			M	1	Primary Option	3A
			C[9]	2	Secondary Option	3A
C	UNT	M			FIRE UNIT	
			O	1	Section	1ANB
			O	2	Platoon	1ANB
			M	3	Battery/Company	1ANB
			M	4	Battalion/Regiment	1-3ANB
			M	5	Regiment/Brigade/ Division	1-3ANB
D	DTG	M			DATE-TIME	
			M	1	Date-Time Group	6N
E	FPN	O			FIRE PLAN NAME	
			M	1	Fire Plan Name	1-6AN
F	UST	C			UNIT STATUS	
			M	1	Fire Unit Status	3A
			C	2	Date-Time Return to Action	6N
G	WPN	C			FIRE UNIT WEAPONS	
			M	1	Number of Weapons	1-2N
			M	2	Weapon Type	4-6X[10]
			M	3	Weapon Model Number	2-6AN
H	URT	O			MISSION RESPONSE TIME	
			M	1	Response Time	1-2N
I	GRID	O			UNIT LOCATION	
			M	1	UTM Easting	6N
			M	2	UTM Northing	1-8N
			M	3	Altitude	1-5NS
J	GZE	C			GRID ZONE	
			M	1	Grid Zone	1-3NS
K	AZF	C			AZIMUTH OF FIRE	

[9] FIELD 2 IN SET B (OPT) IS PROHIBITED IF FIELD 1 IN SET A (MSGID) EQUALS "AFU.FUS".
[10] For example MORTAR

			M	1	Azimuth of Fire	4N
L	MIN	O			MINIMUM RANGE	
			M	1	Minimum Range	1-4N
M	MAX	C			MAXIMUM RANGE	
			M	1	Range Limitation Indicator	1N
			M	2	Maximum Range	1-6N
N	ROF	O			RATE OF FIRE	
			O	1	Maximum Rate of Fire	4NS
			O	2	Sustained Rate of Fire	4NS
O	TRL	C			TRAVERSE LIMITS	
			M	1	Left Traverse Limit	4N
			M	2	Right Traverse Limit	4N
P	FUMSN	O			TACTICAL FIRE UNIT MISSION	
			M	1	Tactical Fire Unit Mission	1-3A
			O	2	Zone of Fire	1-6AN
Q	FSP	O			MANEUVER UNIT SUPPORTED	
			O	1	Battery/Company	1ANB
			O	2	Battalion/Regiment	1-3ANB
			M	3	Regiment/Brigade/ Division	1-3ANB
R	UNR	O			ARTY UNIT REINFORCED	
			O	1	Battalion/Regiment	1-3ANB
			M	2	Regiment/Brigade/ Division	1-3ANB
S	NRS	O			NUCLEAR RADIATION STATUS	
			M	1	Radiation Exposure Status	1N
			O	2	Nuclear Category	6A

7.3 Set and Field Definitions

7.3.1 Set Identifier: MSGID (M) (Message Identification)

Field 1 - Message Type (M). Seven (7) characters used to specify the message type. Legal entry:

AFU.FUS.

Field 2 - Originator (M). Thirteen (13) characters used to specify the logical name of the message originator. Legal entries:

Digits: 0 to 9
Letters: A to Z
Special Character : Period (.)
Blank character (Hex 20).

The period is only valid in the second, fourth, sixth, and tenth character positions, and shall always be present in those character positions.

7.3.2 Set Identifier: OPT (M) (Option)

Field 1 - Primary Option (M). Three (3) letters used to specify the primary action to be taken. Legal entries:

CAN - Cancel
XMT - Transmit.

Field 2 - Secondary Option (C). This field shall not be specified in this message.

7.3.3 Set Identifier: UNT (M) (Fire Unit)

Field 1 - Section (O). One (1) character used to specify the section identification. Legal entries:

Digits: 0 to 9
Letters: A to Z

Field 2 - Platoon (O). One (1) character used to specify the platoon identification. Legal entries:

Digits: 0 to 9
Letters: A to Z
Space (Hex 20).

Field 3 - Battery/Company (M). One (1) character used to specify the battery/company identification. Legal entries:

Digits: 0 to 9
Letters: A to Z.

Field 4 - Battalion/Regiment (M). One (1) to three (3) characters used to specify the battalion/regiment identification. Legal entries:

Digits: 0 to 9
Letters: A to Z
Space (Hex 20).

Field 5 - Regiment/Brigade/Division (M). One (1) to three (3) characters used to specify the regiment/brigade/division identification. Legal entries:

Digits: 0 to 9
Letters: A to Z
Space (Hex 20).

7.3.4 Set Identifier: DTG (M) (Date-Time)

Field 1 - Date-Time Group (M). Six (6) digits used to specify the ZULU date-time of the message. The first two (2) digits represent the day of the month, the second two (2) digits, the hour of the day, and the final two (2) digits, the minutes of the hour. Legal entries:

Day: 01 to 31
Hour: 00 to 23
Minutes: 00 to 59.

7.3.5 Set Identifier: FPN (O) (Fire Plan Name)

Field 1 - Fire Plan Name (M). One (1) to six (6) characters used to specify the name of the fire plan to which the information relates. Legal entries:

Digits: 0 to 9
Letters: A to Z.

7.3.6 Set Identifier: UST (C) (Unit Status)

Field 1 - Fire Unit Status (M). Three (3) letters used to specify the status of the fire unit. Legal entries:

RDY - Ready
OUT - Out.

Field 2 - Date-Time Return to Action (C). Six (6) digits used to specify the ZULU date-time the fire unit is expected to return to action. The first two (2) digits represent the day of the month, the second two (2) digits, the hour of the day, and the final two (2) digits, the minutes of the hour. Legal entries:

Day: 01 to 31
Hour: 00 to 23
Minutes: 00 to 59.

7.6.7 Set Identifier: WPN (C) (Fire Unit Weapons)

Field 1 - Number of Weapons (M). One (1) or two (2) digits used to specify the number of weapons in the fire unit. Legal entries:

1 to 99.

Field 2 - Weapon Type (M). Four (4) to six (6) characters used to specify the weapon type. See Table 19. Legal Entries for Weapons and Models for the codes.

Field 3 - Weapon Model Number (M). Two (2) to six (6) characters used to specify the weapon model number. See Table 19. Legal Entries for Weapons and Models for the codes.

7.6.8 Set Identifier: URT (O) (Mission Response Time)

1 - Response Time (M). One (1) or two (2) digits used to specify the number of minutes needed by the fire unit to respond to a fire mission. Legal entries:

1 to 99.

7.3.9 Set Identifier: GRID (O) (Unit Location)

Field 1 - UTM Easting (M). Six (6) digits used to specify the higher order Easting of the fire

unit location in meters. Legal entries:
000000 to 999999.

Field 2 - UTM Northing (M). One (1) to eight (8) digits used to specify the higher order Northing of the fire unit location in meters. Legal entries:
Northern Hemisphere: 0 to 10000000
Southern Hemisphere: 0 to 11000000.

Field 3 - Altitude (M). One (1) to five (5) characters used to specify the altitude of the location in meters. Altitudes below sea level shall be preceded by a minus (-) sign. Plus (+) is understood if a minus (-) is not specified. Legal entries:
-400 to 99999.

7.3.10 Set Identifier: GZE (C) (Grid Zone)
Field 1 - Grid Zone (M). One (1) to three (3) characters used to specify the earth hemisphere and grid zone designator. One (1) or two (2) digits used to specify the grid zone at the location proceeded by one character used to specify the earth hemisphere. Grid zones in the southern hemisphere shall be preceded by a minus (-) sign. Plus (+) is understood if a minus (-) is not specified but may be entered. Legal entries:
Northern: 1 to 60
Southern: -1 to -60.

7.3.11 Set Identifier: AZF (C) (Azimuth of Fire)
Field 1 - Azimuth of Fire (M). Four (4) digits used to specify the azimuth of fire measured in mils from grid north of the specified fire unit. Legal entries:
0000 to 6399.

7.3.12 Set Identifier: MIN (O) (Minimum Range)
Field 1 - Minimum Range (M). One (1) to four (4) digits used to specify the minimum range of the fire unit weapons in meters. Legal entries:
0 to 9999.

7.3.13 Set Identifier: MAX (C) (Maximum Range)
Field 1 - Range Limitation Indicator (M). One (1) digit used to specify the ammunition to which the maximum range in Field 2 applies. Legal entries:
1 - High Explosive Normal Range
2 - High Explosive Extended Range

Field 2 - Maximum Range (M). One (1) to six (6) digits used to specify the maximum range in meters for the ammunition type specified in Field 1. Legal entries:
0 to 999999.
NOTE: Fields 1 and 2 may be specified as a group up to five (5) times, initial plus four (4).

7.3.14 Set Identifier: ROF (O) (Rate of Fire)
Field 1 - Maximum Rate of Fire (O). Four (4) characters used to specify the maximum rate of fire of the fire unit weapons. Entry is rounds-per-piece per minute for a three (3) minute period. The third character position shall always be the special character Period (.). Legal entries:
00.1 to 99.9.

Field 2 - Sustained Rate of Fire (O). Four (4) characters used to specify the maximum rate of

fire that can be sustained over a period after the first three (3) minutes. Entry is rounds-per-piece per minute for the fire unit weapons. The third character position shall always be the special character Period (.). Legal entries:

to 99.9

7.3.15 Set Identifier: TRL (C) (Traverse Limits)

Field 1 - Left Traverse Limit (M). Four (4) digits used to specify the left traverse limit, measured in mils from the azimuth of fire in a counter-clockwise direction. Legal entries:

0000 to 6400.

Field 2 - Right Traverse Limit (M). Four (4) digits used to specify the right traverse limit measured in mils from the azimuth of fire in a clockwise direction. Legal entries:

0000 to 6400.

7.3.16 Set Identifier: FUMSN (O) (Tactical Fire Unit Mission)

Field 1 - Tactical Fire Unit Mission (M). One (1) to three (3) letters used to specify the tactical mission assigned to the fire unit. Legal entries:

DS - Direct Support
GS - General Support
GSR - General Support Reinforcing
R - Reinforcing.

Field 2 - Zone of Fire (O). One (1) to six (6) characters used to specify the fire unit zone of fire (responsibility). Legal entries:

Digits: 0 to 9
Letters: A to Z.

7.3.17 Set Identifier: FSP (O) (Maneuver Unit Supported)

Field 1 - Battery/Company (O). One (1) character used to specify the battery/company identification. Legal entries:

Digits: 0 to 9
Letters: A to Z
Space (Hex 20).

Field 2 - Battalion/Regiment (O). One (1) to three (3) characters used to specify the battalion/regiment identification. Legal entries:

Digits: 0 to 9
Letters: A to Z
Space (Hex 20).

Field 3 - Regiment/Brigade/Division (M). One (1) to three (3) characters used to specify the regiment/brigade/division identification. Legal entries:

Digits: 0 to 9
Letters: A to Z
Space (Hex 20).

7.3.18 Set Identifier: UNR (O) (Arty Unit Reinforced)

Field 1 - Battalion/Regiment (O). One (1) to three (3) characters used to specify the battalion/regiment identification. Legal entries:

Digits: 0 to 9
Letters: A to Z
Space (Hex 20).

Field 2 - Regiment/Brigade/Division (M). One (1) to three (3) characters used to specify the regiment/brigade/division identification. Legal entries:
Digits: 0 to 9
Letters: A to Z
Space (Hex 20).

7.3.19 Set Identifier: NRS (O) (Nuclear Radiation Status)

Field 1 - Radiation Exposure Status (M). One (1) digit used to specify the nuclear radiation exposure status of the fire unit. Legal entries:
0 - No Exposure
1 - Greater than zero (0), but less than or equal to 70 Rads
2 - Greater than 70, but less than or equal to 150 Rads
3 - Greater than 150 Rads.

Field 2 - Nuclear Category (O). Six (6) letters used to specify the fire unit nuclear vulnerability category. See Table 21. Legal Entries for Vulnerability Categories contains the target type/subtype conversion to vulnerability categories.

7.4 Message Processing

7.4.1 Cases

CASE: Transmit Status For Current Operations
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified "XMT" (Transmit)
AND Set UNT
AND Set DTG
AND Set UST
AND Set GRID
AND Set GZE
AND NOT Set FPN
END CASE

CASE: Transmit Fire Plan Fire Unit Status
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified "XMT" (Transmit)
AND Set UNT
AND Set DTG
AND Set FPN
AND Set UST
AND Set GRID
AND Set GZE
END CASE

CASE: Delete Fire Unit Status For Current Operations

THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified "CAN" (Cancel)
AND Set UNT
AND Set DTG
AND NOT Set FPN
AND NOT Set UST
AND NOT Set WPN
AND NOT Set GRID
AND NOT Set GZE
AND NOT Set AZF
AND NOT Set MIN
AND NOT Set MAX
AND NOT Set ROF
AND NOT Set TRL
AND NOT Set FUMSN
AND NOT Set FSP
AND NOT Set UNR
AND NOT Set NRS
AND NOT Set URT
END CASE

CASE: Delete Fire Unit Status in a Fire Plan
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified "CAN" (Cancel)
AND Set UNT
AND Set DTG
AND Set FPN
AND NOT Set UST
AND NOT Set WPN
AND NOT Set URT
AND NOT Set GRID
AND NOT Set GZE
AND NOT Set AZF
AND NOT Set MIN
AND NOT Set MAX
AND NOT Set TRL
AND NOT Set FUMSN
AND NOT Set FSP
AND NOT Set UNR
AND NOT Set NRS
AND NOT Set ROF
END CASE

7.4.2 Conditions

IF Field 1 (Fire Unit Status) of Set UST (Unit Status) is specified "RDY" (Ready)
THEN Field 2 (Expected Time Return to Action) of Set UST shall not be specified
ELSE Field 2 of Set UST shall be specified
ENDIF

IF Set GRID (Unit Location) is specified
THEN Set GZE (Grid Zone) shall be specified
ENDIF

IF Field 1 (Fire Unit Status) of Set UST (Unit Status) is specified "RDY" (Ready)
THEN Set WPN (Fire Unit Weapons) shall be specified
AND Set MAX (Maximum Range) shall be specified
ENDIF

IF Field 1 (Primary Option) of Set OPT (Option) is specified “CAN” (Cancel)
THEN Set UST (Unit Status) shall NOT be specified
ENDIF

IF Field 1 (Fire Unit Status) of Set UST (Unit Status) is specified “RDY” (Ready)
AND Field 3 (Weapon Model Number) of Set WPN (Fire Unit Weapon)is NOT specified “M270” (MLRS)
THEN Set TRL (Traverse Limits) shall be specified
AND Set AZF (Azimuth of Fire) shall be specified
ENDIF

IF the sum of the entries to Fields 1 and 2 of Set TRL (Traverse Limits) is greater than 6400 mils
THEN The message shall be rejected
AND A SYS.RRM returned to the message originator with Set REPLY specified “VER” (Verify)
ENDIF

7.5 Expected Response

7.5.1 No response is expected by the AFU.FUS message originator.

7.6 Special Considerations

7.6.1 IF Set FPN (Fire Plan Name) is specified
THEN The specified fire unit shall be assigned to the specified fire plan
AND Shall NOT be available for fire mission processing in current operations unless the unit is also in current operations
ENDIF

7.6.2 IF Field 1 (Primary Option) of Set OPT (Option) is specified "CAN" (Cancel)
AND Only Sets UNT (Fire Unit) and DTG (Date-Time) are specified
THEN The specified fire unit shall be deleted from current operations
AND The ammunition (AFU.AMS) for the specified fire unit shall be deleted
ENDIF

7.6.3 IF Set FPN (Fire Plan Name) is specified
AND A fire plan does NOT exist for the name specified in Set FPN
THEN The message will be rejected
ENDIF

7.6.4 IF Set FPN (Fire Plan Name) is specified
AND Field 1 (Primary Option) of Set OPT (Option) is specified "XMT" (Transmit)
THEN The fire unit specified by Set UNT shall be assigned to the specified fire plan
AND The status sets specified shall NOT effect the fire unit status in current operations
ENDIF

7.6.5 IF Set FPN (Fire Plan) is specified
AND Field 1 (Primary Option) of Set OPT (Option) is specified "CAN" (Cancel)
THEN The specified fire unit shall be deleted from the specified fire plan
AND The ammunition record (AFU.AMS) if previously established shall be deleted from the fire plan for the specified fire unit
AND The cancellation shall NOT affect current operations
ENDIF

7.6.6 IF Field 3 (Weapon Model Number) of Set WPN (Fire Unit Weapons) is specified “M270” (MLRS)
AND Set ROF (Rate of Fire) is specified
AND/OR Set TRL (Traverse Limits) is specified
THEN Set ROF (Rate of Fire) may be ignored
AND Set TRL (Traverse Limits) may be ignored
ENDIF

7.6.7 IF the sum of the entries to Fields 1 and 2 of Set TRL is 6400
THEN This indicates that this fire unit periodically covers the full circle in both directions
ENDIF

8. ATI.ATR

8.1 General

8.1.1 This message will be used to transmit target information in the form of complete target records either on the initiative of the sender or in response to ATI.TIR one-time requests for information.

This message shall also be used to establish or delete target information.

8.2 Message Content

Ser	SET ID	Set OCC	Field OCC	Fld No	Field Title	Field Length
A	MSGID	M			MESSAGE IDENTIFICATION	
			M	1	Message Type	7X
			M	2	Originator	13X
B	OPT	M			OPTION	
			M	1	Primary Option	3A
			C[11]	2	Secondary Option	3A

[11] FIELD 2 IN SET B (OPT) IS PROHIBITED IF FIELD 1 IN SET A (MSGID) EQUALS "ATI.ATR".

C	TNO	M			TARGET NUMBER	
			M	1	Target Number	6AN
D	DTG	O			DATE-TIME	
			M	1	Date-Time Group	6N
E	GRID	O			TARGET LOCATION	
			M	1	UTM Easting	6N
			M	2	UTM Northing	1-8N
			M	3	Altitude	1-5NS
F	GZE	C			GRID ZONE	
			M	1	Grid Zone	1-3NS
G	TST	C			TARGET DESCRIPTION	
			M	1	Target Type	3-6A
			M	2	Target Subtype	2-6A
			C	3	Degree of Protection	4-6A
H	STR	O			TARGET STRENGTH	
			M	1	Number of Target Elements	1-4N
I	SIZ	O			TARGET SIZE	
			M	1	Length or radius	1-4N
			C	2	Width	1-4N
			O	3	Attitude	4N
J	TAC	C			TARGET ACQUISITION	
			M	1	Target Acquisition Agency	2-6A
			C	2	Location Accuracy	1-3N
			C	3	Evaluation Reliability	1A
K	PERM	O			PERMANENCE	
			M	1	Target Permanence	4N
L	TSI	O			TARGET STATUS	
			O	1	Mission Fired	3A
			O	2	Confirmed Target	3A
M	SUR	O			MISSION SURVEILLANCE	
			O	1	Target Disposition	3-4A
			O	2	Number of Casualties	1-4N
N	IRC	C			INFORMATION REQUEST	
			M	1	Request Category	3A
			C	2	Request Number	1N
O	SRMK	O			SPECIAL REMARKS	
			M		Plain Text	1-12X

8.3 Set and Field Definition

8.3.1 Set Identifier: MSGID (M) (Message Identification)

Field 1 - Message Type (M). Seven (7) characters used to specify the message type. Legal entry:
ATI.ATR.

Field 2 - Originator (M). Thirteen (13) characters used to specify the logical name of the message originator. Legal entries:
Digits: 0 to 9
Letters: A to Z
Special Character : Period (.)
Blank character (Hex 20).

The period is only valid in the second, fourth, sixth, and tenth character positions, and shall always be present in those character positions.

8.3.2 Set Identifier: OPT (M) (Option)

Field 1 - Primary Option (M). Three (3) letters used to specify the primary option to be taken. Legal entries:
CAN - Cancel
XMT - Transmit.

Field 2 - Secondary Option (C). This field shall not be specified in this message.

8.3.3 Set Identifier: TNO (M) (Target Number)

Field 1 - Target Number (M). Six (6) characters used to specify the target number. The first two (2) characters shall be letters followed by four (4) digits. Legal entries:
Letters: AA to ZZ
Digits: 0001 to 9999.

8.3.4 Set Identifier: DTG (O) (Date-Time)

Field 1 - Date-Time Group (M). Six (6) digits used to specify the ZULU date-time that the target was acquired or the date-time that the target data was updated. The first two (2) digits represent the day of the month, the second two (2) digits, the hour of the day, and the final two digits, the minutes of the hour. Legal entries:
Day: 01 to 31
Hour: 00 to 23
Minutes: 00 to 59.

8.3.5 Set Identifier: GRID (O) (Target Location)

Field 1 - UTM Easting (M). Six (6) digits used to specify the higher order Easting of the target location in meters. Legal entries:
000000 to 999999.

Field 2 - UTM Northing (M). One (1) to eight (8) digits used to specify the higher order Northing of the target location in meters. Legal entries:
Northern Hemisphere: 0 to 10000000
Southern Hemisphere: 0 to 11000000.

Field 3 - Altitude (M). One (1) to five (5) characters used to specify the altitude of the location in meters. Altitudes below sea level shall be preceded by a minus (-) sign. Plus (+) is understood if a minus (-) is not specified. Legal entries:
-400 to 99999.

8.3.6 Set Identifier: GZE (C) (Grid Zone)

Field 1 - Grid Zone (M). One (1) to three (3) characters used to specify the earth hemisphere and grid zone designator. One (1) or two (2) digits used to specify the grid zone at the location proceeded by one (1) character used to specify the earth hemisphere. Grid zones in the southern hemisphere shall be preceded by a minus (-) sign. Plus (+) is understood if a minus (-) is not specified but may be entered. Legal entries:
Northern: 1 to 60
Southern: -1 to -60.

8.3.7 Set Identifier: TST (C) (Target Description)

Field 1 - Target Type (M). Three (3) to six (6) letters used to specify the target type. See Table 17. Legal Entries for Target Type/Subtype for the codes.

Field 2 - Target Subtype (M). Two (2) to six (6) letters used to specify the target subtype. See Table 17. Legal Entries for Target Type/Subtype for the codes.

Field 3 - Degree of Protection (C). Four (4) to six (6) letters used to specify the degree of personnel protection. See Table 18. Legal Entries for Degree of Protection for the codes.

8.3.8 Set Identifier: STR (O) (Target Strength)

Field 1 - Number of Target Elements (M). One (1) to four (4) digits used to specify the number of target elements. Legal entries:
1 to 9999.

8.3.9 Set Identifier: SIZ (O) (Target Size)

Field 1 - Length (M). One (1) to four (4) digits used to specify either the length (rectangular) or radius (circular) in meters. Legal entries:
1 to 9999.

Field 2 - Width (C). One (1) to four (4) digits used to specify the width in meters. Legal entries:
1 to 9999.

Field 3 - Attitude (O). Four (4) digits used to specify the azimuth in mils of the longest axis in mils. Legal entries:
0000 to 6399.

8.3.10 Set Identifier: TAC (C) (Target Acquisition)

Field 1 - Target Acquisition Agency (M). Two (2) to six (6) letters used to specify the target acquisition agency that reported the target. See Table 29. Legal Entries for Target Acquisition Agency for the codes.

Field 2 - Location Accuracy (C). One (1) to three (3) digits used to specify the target location accuracy in meters. Legal entries:
1 to 999.

Field 3 - Evaluation Reliability (C). One (1) letter used to specify the reliability of the report as determined by the originating target acquisition agency. Legal entries:
A - Excellent
B - Good
C - Fair.

8.3.11 Set Identifier: PERM (O) (Permanence)

Field 1 - Target Permanence (M). Four (4) digits used to specify the length of time in hours and minutes that the target is estimated to be at its location. The first two (2) digits represent the number of hours, the second two (2) the minutes. Legal entries:
Hours: 00 to 99
Minutes: 00 to 59.

8.3.12 Set Identifier: TSI (O) (Target Status)

Field 1 - Mission Fired (O). Three (3) letters used to specify that the target has been engaged. Legal entry:
MFD – Mission Fired.

Field 2 - Confirmed Target (O). Three (3) letters used to specify that the reported target is an unconfirmed target. Legal entry:
SUS – Suspected Target.

8.3.13 Set Identifier: SUR (O) (Mission Surveillance)

Field 1 - Target Disposition (O). Three (3) or four (4) letters used to specify the disposition of the target at the completion of firing. See Legal Entries Table 20 (Legal Entries for Disposition of Target), page 187 for the codes.

Field 2 - Number of Casualties (O). One (1) to four (4) digits used to report the number of enemy casualties at the completion of firing. Legal entries:
1 to 9999.

8.3.14 Set Identifier: IRC (C) (Information Request)

Field 1 - Request Category (M). Three (3) letters used to specify that this target report is in response to a one-time request or a standing request for target information. Legal entries:
ATQ - Artillery Target Query

SRI - Standing Request for Information.

Field 2 - Request Number (C). One (1) digit used to specify the number of the SRI for which this report is in response. Legal entries:
1 to 3.

8.3.15 Set Identifier: SRMK (O) (Special Remarks)

Field 1 - Plain Text (M). One (1) to twelve (12) characters used to specify plain text remarks as required. Legal entries:
Digits: 0 to 9
Letters: A to Z
Special characters, except the semicolon (;)
Blank character (HEX 20).

8.4 Message Processing

Cases

CASE: Transmit a Target Record in Response to a Request For Information
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified "XMT" (Transmit)
AND Set TNO
AND Set DTG
AND Set GRID
AND Set GZE
AND Set TST
AND Set TAC
AND Set IRC
END CASE

CASE: Report A Target
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified "XMT" (Transmit)
AND Set TNO
AND Set DTG
AND Set GRID
AND Set GZE
AND Set TAC
AND Set TST
AND NOT Set IRC
END CASE

CASE: Delete A Target
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified "CAN" (Cancel)
AND Set TNO
AND NOT Set DTG
AND NOT Set GRID
AND NOT Set GZE

AND NOT Set TST
AND NOT Set STR
AND NOT Set SIZ
AND NOT Set TAC
AND NOT Set PERM
AND NOT Set TSI
AND NOT Set SUR
AND NOT Set IRC
AND NOT Set SRMK
END CASE

8.4.1 Conditions

IF Field 1 (Primary Option) of Set OPT (Option) is specified "XMT" (Transmit)
THEN Set TAC (Target Acquisition) shall be specified
AND Field 2 (Location Accuracy) of Set TAC shall be specified
AND/OR Field 3 (Evaluation Reliability) of Set TAC shall be specified
ENDIF

IF Set GRID (Target Location) is specified
THEN Set GZE (Grid Zone) shall be specified
ELSE Set GZE shall NOT be specified
ENDIF

IF Field 3 (Attitude) of Set SIZ (Target Size) is specified
THEN Field 2 (Width) of Set SIZ shall be specified
ENDIF

IF the ATI.ATR is in response to an ATQ (Query)
ORThe ATI.ATR is in response to a SRI (Standing Request for Information)
THEN Set IRC (Information Request) shall be specified
ELSE Set IRC shall NOT be specified
ENDIF

IF Field 1 (Request Category) of Set IRC (Information Request) is specified "SRI" (Standing Request for Information)
THEN Field 2 (Request Number) shall be specified
ELSE Field 2 shall NOT be specified
ENDIF

IF Field 1 (Target Type) of Set TST (Target Description) is specified “PERS” (Personnel)
THEN Field 3 (Degree of Protection) shall be specified
ENDIF

IF Field 1 (Primary Option) of Set OPT (Option) is specified “XMT” (Transmit)
THEN Set TST (Target Description) shall be specified
ENDIF

8.4.2 Defaults

IF Field 1 (Length) of Set SIZ (Target Size) is specified
AND Set Field 2 (Width) of Set SIZ is specified
AND Set Field 3 (Attitude) of Set SIZ is NOT specified
THEN Field 3 shall default to an attitude of 0000 mils
ENDIF

8.5 Expected Response

No response is expected by the ATI.ATR originator.

8.6 Special Considerations

8.6.1 IF Field 1 (Mission Fired) of Set TSI (Target Status) is NOT specified
THEN The time specified by Set DTG (Date-Time) shall be the time the information was acquired
ENDIF

8.6.2 IF Field 1 (Mission Fired) of Set TSI (Target Status) is specified
THEN The time specified by Set DTG (Date-Time) shall be the date-time that the mission was fired
ENDIF

8.6.3 IF Field 1 (Primary Option) of Set OPT (Option) is specified “CAN” (Cancel)
AND A target matching that specified by Set TNO (Target Number) does NOT exist
THEN The message will be rejected
ENDIF

8.6.4 IF only Field 1 (Length) of Set SIZ (Target Size) is specified
THEN The target shall be a circular target centered at the location specified by Set GRID (Target Location)
ENDIF

8.6.5 IF Field 1 (Length) of Set SIZ (Target Size) is specified
AND Field 2 (Width) of Set SIZ is specified
AND Field 3 (Attitude) of Set SIZ is specified
THEN The target shall be a rectangular target centered at the location specified by Set GRID (Target Location)
AND At the attitude specified by Field 3
ENDIF

9. ATI.TIR

9.1 General

9.1.1 This message will be used to request target information either as a one-time query or as a standing request for target information**.**

9.2 Message Content

Ser	Set ID	Set OCC	Fld OCC	Fld No	Field Title	Field Length
A	MSGID	M			MESSAGE ID	
			M	1	Message Type	7X
			M	2	Originator	13X
B	TIRL	M			TGT INFO REQUEST LEVEL	
			M	1	Arty request/query category	3A
			C	2	Tgt Info Request response level	1N
C	OPT	M			OPTION	
			M	1	Primary Option	3A
			C[12]	2	Secondary Option	3A
D	DTG	C			DATE-TIME	
			M	1	Date-Time Group	6N
E	TNO	C			TARGET NUMBER	
			M	1	Target Number	6AN
F	SNO	C			STANDING REQUEST FOR INFORMATION NUMBER	
			M	1	Standing request for information identifier	1N
G	SLOC	C			RECTANGULAR SEARCH AREA	
			M	1	UTM Easting	6N
			M	2	UTM Northing	1-8N
			M	3	UTM Easting	6N
			M	4	UTM Northing	1-8N
			M	5	Search Zone Width	2-4N
H	CIR	C			CIRCULAR SEARCH AREA	
			M	1	UTM Easting	6N
			M	2	UTM Northing	1-8N
			M	3	Radius	2-4N
I	GZE	C			GRID ZONE	
			M	1	Grid Zone	1-3NS
J	TST	C			TARGET DESCRIPTION	
			M	1	Target Type	3-6A
			O	2	Target Subtype	2-6A
			C	3	Degree of Protection	4-6A
K	DSIZ	C			TARGET SIZE	
			M	1	Lower Length/radius Limit	2-4N
			M	2	Upper Length/radius Limit	2-4N
			C	3	Lower Width Limit	2-4N
			C	4	Upper Width Limit	2-4N

[12] FIELD 2 IN SET C (OPT) IS PROHIBITED IF FIELD 1 IN SET A (MSGID) EQUALS "ATI.TIR".

L	DSTR	C			TARGET STRENGTH	
			M	1	Lower Strength Limit	1-4N
			M	2	Upper Strength Limit	1-4N
M	TSI	O			MISSION FIRED INDICATOR	
			O	1	Mission Fired Indicator	3A
			O	2	Target Confirmation Status	3A
N	REL	O			TARGET SEARCH RELIABILITY	
			M	1	Evaluation of Target Reliability	1A

9.3 Set and Field Definitions

9.3.1 Set Identifier: MSGID (M) (Message Identification)

Field 1 - Message Type (M). Seven (7) characters used to specify the message type. Legal entry:

ATI.TIR.

Field 2 - Originator (M). Thirteen (13) characters used to specify the logical name of the message originator. Legal entries:

Digits: 0 to 9
Letters: A to Z
Special Character : Period (.)
Blank character (Hex 20).

The period is only valid in the second, fourth, sixth, and tenth character positions, and shall always be present in those character positions.

9.3.2 Set Identifier: TIRL (M) (TGT Info Request Level)

Field 1 - Arty Request/Query Category (M). Three (3) letters used to specify if this message is a one-time request (ATQ) or a standing request for target information (SRI). Legal entries:

ATQ - Artillery Target Query
SRI - Standing Request for Information.

Field 2 - TGT Info Request Response Level (C). One (1) digit used to specify the detail of the target data to be retrieved in output reports. Legal entries:

1 - A count of targets meeting the search criteria (SYS.RRM)
2 - A detailed output report of the targets meeting the search criteria (ATI.ATR)

9.3.3 Set Identifier: OPT (M) (Option)

Field 1 - Primary Option (M). Three (3) letters used to specify the primary option to be taken. Legal entries:

XMT - Transmit
CAN - Cancel the existing SRI.

Field 2 - Secondary Option (C). This field shall NOT be specified in this message.

9.3.4 Set Identifier: DTG (C) (Date-Time)

Field 1 - Date-Time Group (M). Six (6) digits used to specify either the ZULU date-time of the message or the date-time for the search criteria. The first two (2) digits represent the day of the month, the next two (2) digits, the hour of the day, and the final two (2) digits, the minutes of the hour. Legal entries:

Day: 01 to 31
Hour: 00 to 23
Minutes: 00 to 59.

9.3.5 Set Identifier: TNO (C) (Target Number)

Field 1 - Target Number (M). Six (6) characters used to specify the target number. The first two (2) characters shall be letters followed by four (4) digits. Legal entries:

Letters: AA to ZZ
Digits: 0001 to 9999.

9.3.6 Set Identifier: SNO (C) (Standing Request for Information Number)

Field 1 - Standing Request for Information Identifier (M). One (1) digit used to specify the Standing Request for Information identifier (SRI) number. Legal entries:

1 to 3.

9.3.7 Set Identifier: SLOC (C) (Rectangular Search Area)

Field 1 - UTM Easting (M). Six (6) digits used to specify the higher order Easting of the first coordinate point in meters. Legal entries:

000000 to 999999.

Field 2 - UTM Northing (M). One (1) to eight (8) digits used to specify the higher order Northing of the first coordinate point in meters. Legal entries:

Northern Hemisphere: 0 to 10000000
Southern Hemisphere: 0 to 11000000

Field 3 - UTM Easting (M). Six (6) digits used to specify the higher order Easting of the second coordinate point in meters. Legal entries:

000000 to 999999.

Field 4 - UTM Northing (M). One (1) to eight (8) digits used to specify the higher order Northing of the second coordinate point in meters. Legal entries:

Northern Hemisphere: 0 to 1000000
Southern Hemisphere: 0 to 11000000.

Field 5 - Search Zone Width (M). Two (2) to four (4) digits used to specify the width of the search area in meters. A point equal distance along the thrust line. Legal entries:

10 to 9999.

9.3.8 Set Identifier: CIR (C) (Circular Search Area)

Field 1 - UTM Easting (M). Six (6) digits used to specify the higher order Easting of the

location in meters. Legal entries:
000000 to 999999.

Field 2 - UTM Northing (M). One (1) to eight (8) digits used to specify the higher order Northing of the location in meters. Legal entries:
Northern Hemisphere: 0 to 10000000
Southern Hemisphere: 0 to 11000000.

Field 3 - Radius (M). Two (2) to four (4) digits used to specify the radius of the location in meters. Legal entries:
10 to 9999.

9.3.9 Set Identifier: GZE (C) (Grid Zone)

Field 1 - Grid Zone (M). One (1) to three (3) characters used to specify the earth hemisphere and grid zone designator. One (1) or two (2) digits used to specify the grid zone at the location preceded by one (1) character used to specify the earth hemisphere. Grid zones in the southern hemisphere shall be preceded by a minus (-) sign. Plus (+) is understood if a minus (-) is not specified but may be entered. Legal entries:
Northern: 1 to 60
Southern: -1 to -60.

NOTE: Field 1 may be repeated up to two (2) times, initial plus one (1) to allow for different grid zones in Set SLOC.

9.3.10 Set Identifier: TST (C) (Target Description)

Field 1 - Target Type (M). Three (3) to six (6) letters used to specify the target type. See Table 17. Legal Entries for Target Type/Subtype for the codes.

Field 2 - Target Subtype (O). Two (2) to six (6) letters used to specify the target subtype. See Table 17. Legal Entries for Target Type/Subtype for the codes.

Field 3 - Degree of Protection (C). Four (4) to six (6) letters used to specify the general degree of personnel protection. See Table 18. Legal Entries for Degree of Protection for the codes.

9.3.11 Set Identifier: DSIZ (C) (Target Size)

Field 1 - Lower Length/Radius Limit (M). Two (2) to four (4) digits used to specify either the lower radius (circular targets) or the lower length limit (rectangular targets) in meters for the search criteria. Legal entries:
10 to 9999.

Field 2 - Upper Length/Radius Limit (M). Two (2) to four (4) digits used to specify either the upper radius (circular targets) or the upper length limit (rectangular targets) in meters for the search criteria. Legal entries:
10 to 9999.

Field 3 - Lower Width Limit (C). Two (2) to four (4) digits used to specify the lower width limit in meters for rectangular targets search criteria. Legal entries:

10 to 9999.

Field 4 - Upper Width Limit (C). Two (2) to four (4) digits used to specify the upper width limit in meters for rectangular targets search criteria. Legal entries:
10 to 9999.

9.3.12 Set Identifier: DSTR (C) (Target Strength)

Field 1 - Lower Strength Limit (M). One (1) to four (4) digits used to specify the lower number of target elements to be used as a search criteria. Legal entries:
0 to 9999.

Field 2 - Upper Strength Limit (M). One (1) to four (4) digits used to specify the upper number of target elements to be used as a search criteria. Legal entries:
0 to 9999.

9.3.13 Set Identifier: TSI (O) (Mission Fired Indicator)

Field 1 - Mission Fired Indicator (O). Three (3) letters used to specify that only targets that have been fired shall be retrieved. Legal entry:
MFD – Mission Fired.

Field 2 - Target Confirmation Status (O). Three (3) letters used to specify that only confirmed targets shall be retrieved. Legal entry:
CFM – Confirmed Target.

9.3.14 Set Identifier: REL (O) (Target Search Reliability)

Field 1 - Evaluation of Target Reliability (M). One (1) letter used to specify that the reliability of the target shall be used as a search criteria. Legal entries:
A - Excellent
B - Good
C - Fair

9.4 Message Processing

9.4.1 Cases

CASE: Establish A Standing Request for Target Information
THIS CASE REQUIRES
Field 1 (Request Category) of Set TIRL specified "SRI"
AND Field 1 (Primary Option) of Set OPT specified "XMT" (Transmit)
AND Set SNO
AND NOT Set TNO
END CASE

CASE: Transmit a Specific Artillery Target Query
THIS CASE REQUIRES
Field 1 (Primary Option) Set OPT specified "XMT" (Transmit)
AND Field 1 (Request Category) of Set TIRL specified "ATQ"
AND Set TNO

AND NOT Set DTG
AND NOT Set SNO
AND NOT Set SLOC
AND NOT Set CIR
AND NOT Set GZE
AND NOT Set TST
AND NOT Set DSTR
AND NOT Set TSI
AND NOT Set REL
END CASE

CASE: Cancel A Standing Request for Information
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT specified "CAN"
AND Field 1 (Request Category) of Set TIRL specified "SRI"
AND Set SNO
AND NOT Set TNO
AND NOT Set SLOC
AND NOT Set CIR
AND NOT Set GZE
AND NOT Set DSIZ
AND NOT Set DSTR
AND NOT Set TSI
AND NOT Set REL
AND NOT Set TST
END CASE

CASE: Cancel All Standing Requests for Information
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT specified "CAN"
AND Field 1 (Request Category) of Set TIRL specified "SRI"
AND NOT Set SNO
AND NOT Set TNO
AND NOT Set SLOC
AND NOT Set CIR
AND NOT Set GZE
AND NOT Set DSIZ
AND NOT Set DSTR
AND NOT Set TSI
AND NOT Set REL
AND NOT Set TST
END CASE

CASE: Transmit a General Artillery Target Query
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT specified “XMT” (Transmit)
AND Field 1 (Request Category) of Set TIRL specified “ATQ” (Artillery Target Query)
AND At least one of
Set DTG

Set SLOC
Set CIR
Set GZE
Set TST
Set DSTR
Set TSI
Set REL
AND NOT Set TNO
AND NOT Set SNO
END CASE

9.4.2 Conditions

IF Field 1 (Arty Request/QueryCategory) of Set TIRL (TGT Info Request Level) is specified "SRI" (Standing Request for Information)
THEN Field 2 (TGT Info Request Response Level) of Set TIRL shall NOT be specified
ELSE IF Field 1 of Set TIRL is specified "ATQ" (Artillery Target Query)
THEN Field 2 of Set TIRL shall be specified
ENDIF

IF Set TNO (Target Number) is specified
THEN Field 1 (Arty Request/Query Category) of Set TIRL (TGT Info Request Level) shall be specified "ATQ" (Artillery Target Query)
ENDIF

IF Set SNO (Request Number) is specified
THEN Field 1 (Arty Request/Query Category) of Set TIRL (TGT Info Request Level) shall be specified "SRI" (Standing Request for Information)
ENDIF

IF Set SLOC (Rectangular Search Area) is specified
THEN Set CIR (Circular Search Area) shall NOT be specified
ENDIF

IF Set CIR (Circular Search Area) is specified
THEN Set SLOC (Rectangular Search Area) shall NOT be specified
ENDIF

IF Set SLOC (Rectangular Search Area) is specified
OR Set CIR (Circular Search Area) is specified
THEN Set GZE2 (Grid Zone) shall be specified
ENDIF

IF Field 1 (Arty Request/Query Category) of Set TIRL (TGT Info Request Level) is specified "ATQ" (Artillery Target Query)
AND/OR Set TST (Target Description) is specified
AND/OR Set SLOC (Rectangular Search Area) is specified
AND/OR Set CIR (Circular Search Area) is specified

AND/OR Set DSIZ (Target Size) is specified
AND/OR Set DSTR (Target Strength) is specified
AND/OR Set DTG (Date-Time) is specified
THEN Set TNO shall NOT be specified
ENDIF

IF Set TST (Target Description) is specified
AND Field 3 (Degree of Protection) of Set TST is specified
THEN Field 1 (Target Type) shall be specified "PERS" (Personnel)
ELSE Field 3 of Set TST shall NOT be specified
ENDIF

IF Set DSIZ (Target Size) is specified
AND Field 3 (Lower Width Limit) of Set DSIZ is specified
THEN Field 4 (Upper Width Limit) of Set DSIZ shall be specified
ENDIF

IF Set DSIZ (Target Size) is specified
AND Field 4 (Upper Width Limit) of Set DSIZ is specified
THEN Field 3 (Lower Width Limit) of Set DSIZ shall be specified
ENDIF

IF Field 1 (Arty Request/Query Category) of Set TIRL (TGT Info Request Level) is specified “SRI” (Standing Request for Information)
THEN Set TNO (Target Number) shall NOT be specified
ENDIF

IF Set TNO (Target Number) is specified
THEN Field 2 (Response Level) of Set TIRL (TGT Info Request Level) shall be specified “2” (Detailed Report)
ENDIF

IF Field 1 (Arty Request/Query Category) of Set TIRL (TGT Info Request Level) is specified “ATQ” (Artillery Target Query)
AND Set TNO (Target Number) is specified
THEN Set TST (Target Description) shall NOT be specified
AND Set SLOC (Rectangular Search Area) shall NOT be specified
AND Set CIR (Circular Search Area) shall NOT be specified
AND Set DSIZ (Target Size) shall NOT be specified
AND Set DSTR (Target Strength) shall NOT be specified
AND Set DTG (Date-Time) shall NOT be specified
ENDIF

IF Field 3 (UTM Easting) and Field 4 (UTM Northing) of Set SLOC (Rectangular Search Area) are in a different Grid Zone than Field 1 (UTM Easting) and Field 2 (UTM Northing)
THEN The second iteration of Set GZE (Grid Zone) shall be specified
AND The difference between the two iterations shall not exceed one (1)
ENDIF

IF Field 1 (Arty Request/Query Category) of Set TIRL (TGT Info Request Level) is specified

“ATQ” (Artillery Target Query)

THEN	Set TNO (Target Number) shall be specified
OR	At least one of Sets DTG, SLOC, CIR, TST, DSIZ, DSTR shall be specified
ENDIF	

9.5 Expected Response

9.5.1 When Field 1 (Arty Request/Query Category) of Set TIRL (TGT Info Request Level) is specified “ATQ” and Field 2 (TGT Info Request Response Level) of Set TIRL is specified “1”, a SYS.RRM shall be returned to the ATI.TIR originator with Set REF specified “ATI.TIR” and with Set RMKS specified with the count of targets meeting the search criteria.

9.5.2 When Field 1 (Arty Request/Query Category) of Set TIRL (TGT Info Request Level) is specified "ATQ" and Field 2 (TGT Info Request Response Level) of Set TIRL is specified "2", then ATI.ATR messages shall be returned to the ATI.TIR originator for all targets meeting the specified search criteria.

9.5.3 When Field 1 (Arty Request/Query Category) of Set TIRL (TGT Info Request Level) is specified “SRI”, then ATI.ATR messages shall initially be returned to the ATI.TIR originator for all targets meeting the specified criteria. Subsequently, ATI.ATR messages shall be transmitted to the ATI.TIR originator for all new targets and target updates meeting the search criteria, as they are received by the transmitting system on a continuous basis until the “SRI” is cancelled.

9.6 Special Considerations

9.6.1 IF Field 1 (Arty Request/Query Category) of Set TIRL (TGT Info Request Level) is specified “ATQ” (Artillery Target Query)

AND	Set DTG (Date-Time) is specified
AND	The specified date-time is less than the current date-time
THEN	The retrieved targets shall have a date-time greater than or equal to that specified by Set DTG
ENDIF	

When Set SLOC or Set CIR are NOT specified, all targets that meet other search criteria shall be retrieved, regardless of their location.

When Field 2 (Target Subtype) is NOT specified, all target subtypes of the target type specified in Field 1 shall be retrieved.

When Set DSIZ is NOT specified, the targets meeting other search criteria shall be retrieved, regardless of their size.

9.6.2 IF Field 1 (Primary Option) of Set OPT (Option) is specified "XMT" (Transmit)

AND	Set SNO (Standing Request for Information Number) is specified 1, 2, or 3
THEN	An SRI shall be established for the target type specified by Set TST
ENDIF	

9.6.3 IF Field 1 (Primary Option) of Set OPT (Option) is specified "CAN" (Cancel)

AND Field 1 (Arty Request/Query Category) of Set TIRL (TGT Info Request Level) is specified “SRI” (Standing Request for Information)
AND Set SNO (Standing Request for Information Number) is specified
THEN Only the SRI number specified by Set TNO shall be cancelled
ENDIF

9.6.4 IF Field 1 (Arty Request/Query Category) of Set TIRL (TGT Info Request Level) is specified "ATQ" (Artillery Target Query)
AND Set DTG (Date-Time) is specified
AND The specified date-time is equal to or greater than current date-time
THEN The retrieved targets shall be from the specified date-time of the previous month until the current date-time
ENDIF

9.6.5 IF Set SLOC (Rectangular Search Area) is specified
AND Field 5 (Search Zone Width) of Set SLOC is specified
THEN The location specified by Fields 1 and 2 of Set SLOC shall be the origin of the thrust line
AND The location specified by Fields 3 and 4 of Set SLOC shall be the end of the thrust line
AND The width specified by Field 5 of Set SLOC shall bisect the line between the locations
AND The target search criteria shall be established on either side of the line at the overall width specified
ENDIF

9.6.6 IF Set CIR (Circular Search Area) is specified
THEN The search criteria shall be a circle centered at the location specified by Fields 1 and 2
AND At the radius specified by Field 3
ENDIF

9.6.7 IF Set TST (Target Description) is specified
AND Field 1 (Target Type) is specified "PERS" (Personnel)
AND Field 3 (Degree of Protection) is NOT specified
THEN All personnel target types shall be retrieved without regard to degree of protection
ENDIF

9.6.8 IF Set DSIZ (Target Size) is NOT specified
THEN All targets specified by Set TST (Target Description) shall be retrieved regardless of size
ENDIF

9.6.9 IF Set DSIZ (Target Size) is specified
AND Only Fields 1 and 2 of Set DSIZ are specified
THEN The size search criteria shall be circular based on the lower radius (Field 1) and the upper radius (Field 2)
AND All targets matching the circular size criteria shall be retrieved
ENDIF

9.6.10 IF Set DSIZ (Target Size) is specified
AND All four fields are specified
THEN The search criteria shall be rectangular target size
AND All targets matching the rectangular size criteria shall be retrieved
ENDIF

9.6.11 IF Set DSTR (Target Strength) is NOT specified
THEN All targets, regardless of strength of the type specified by Set TST, shall be retrieved
ENDIF

9.6.12 IF Field 1 (Arty Request/Query Category) of Set TIRL (TGT Info Request Level) is specified "ATQ" (Artillery Target Query)
AND Set DTG (Date-Time) is specified
THEN Set DTG is the Date-Time for the Search Criteria
ELSE IF Field 1 (Arty Request/Query Category) is specified "SRI" (Standing Request for Information)
AND Set DTG is specified
THEN Set DTG is the Date-Time of the message
ENDIF

9.6.13 IF Field 1 (Arty Request/Query Category) of Set TIRL (TGT Info Request Level) is specified "SRI"
THEN The message shall be rejected
ENDIF

9.6.14 IF Field 3 (UTM Easting) of Set SLOC (Rectangular Search Area) is in a different Grid Zone than Field 1 (UTM Easting)
THEN The second iteration of Set GZE (Grid Zone) shall be specified
AND The first iteration shall relate to Fields 1 and 2
AND The second iteration shall relate to Fields 3 and 4
ENDIF

9.6.15 IF Field 1 (Primary Option) of Set OPT (Option) is specified "XMT" (Transmit)
AND Set SNO (Standing Request for Information Number) is specified
AND An SRI has been previously established with the number specified by Set SNO
THEN The previous SRI shall be deleted
AND A new SRI shall be established with the number specified by Set SNO
ENDIF

10. FM.CFF

10.1 General

10.1.1 This message will be used to transmit initial Fire for Effect requests for fire and/or orders to fire.

10.2 Message Content

Ser	Set ID	Set OCC	Fld Occ	Fld No	Field Title	Field Length
A	MSGID	M			MESSAGE IDENTIFICATION	
			M	1	Message Type	6X
			M	2	Originator	13X
B	TNO	M			TARGET NUMBER	
			M	1	Target Number	6AN
C	NUN	C			NUMBER OF WEAPONS	
			M	1	Number of Guns	1-2N
D	GRID	M			TARGET LOCATION	
			M	1	UTM Easting	6N
			M	2	UTM Northing	1-8N
			M	3	Altitude	1-5NS
E	GZE	M			TARGET GRID ZONE	
			M	1	Grid Zone	1-3NS
F	TST	M			TARGET DESCRIPTION	
			M	1	Target Type	3-6A
			M	2	Target Subtype	2-6A
			C	3	Degree of Protection	4-6A
G	STR	M			TARGET STRENGTH	
			M	1	Number of Target Elements	1-4N
H	SIZ	M			TARGET SIZE	
			M	1	Length	1-4N
			O	2	Width	1-4N
			C	3	Attitude	4N
I	RVA	O			REPORT VALUE ACCURACY	
			M	1	Report Accuracy	1-3N
J	TRJ	O			TRAJECTORY TYPE	
			M	1	Trajectory Type	3-4A
K	MUE	O			MUNITIONS IN EFFECT	
			C	1	Number of Volleys/Rockets	1-2N
			O	2	Fire For Effect Projectile	3A
			C	3	Fire For Effect Fuze	2-4A[13]
L	EFR	C			EFFECTS REQUIRED	
			M	1	Effects Required	1-2N
M	MOC	M			METHOD OF CONTROL	
			M	1	Method of Control	2-3A
			C	2	Time	4N
			C	3	Duration of Time Window	3N

[13] NABK (AOP 37 – Software Requirements for NABK Release 8 p 8) . See AOP 29 NATO Indirect Fire Interchangability Jun 2004 Edn 3. (Allied Operational Publication) uses 4AN values for fuze type.

N	FIRINT	C			FIRING INTERVAL	
			M	1	Interval Between Volleys	1-3N
			C	2	Duration	1-3N
O	EOM	C			END OF MISSION	
			M	1	End of Mission Indicator	1A

10.3 Set and Field Definitions

10.3.1 Set Identifier: MSGID (M) (Message Identification)

Field 1 - Message Type (M). Six (6) characters used to specify the message type. Legal entry:

FM.CFF.

Field 2 - Originator (M). Thirteen (13) characters used to specify the logical name of the message originator. Legal entries:

Digits: 0 to 9
Letters: A to Z
Special Characters
Space (Hexadecimal 20 or Decimal 32 according to NATO Seven Bit Code Table Standard).
Period (.).

The period is only valid in the second, fourth, sixth, and tenth character positions, and shall always be present in those character positions.

10.3.2 Set Identifier: TNO (M) (Target Number)

Field 1 - Target Number (M). Six (6) characters used to specify the target number. The first two (2) characters shall be letters followed by four (4) digits. Legal entries:

Letters: AA to ZZ
Digits: 0001 to 9999.

10.3.3 Set Identifier: NUN (C) (Number of Weapons)

Field 1 - Number of Guns (M). One (1) or two (2) digits used to specify the number of guns to fire for effect. Legal entries:

1 to 99.

10.3.4 Set Identifier: GRID (M) (Target Location)

Field 1 - UTM Easting (M). Six (6) digits used to specify the higher order Easting of the target location in meters. Legal entries:

000000 to 999999.

Field 2 - UTM Northing (M). One (1) to eight (8) digits used to specify the higher order Northing of the target location in meters. Legal entries:

Northern Hemisphere: 0 to 10000000
Southern Hemisphere: 0 to 11000000.

Field 3 - Altitude (M). One (1) to five (5) characters used to specify the altitude of the location in meters. Altitudes below sea level shall be preceded by a minus (-) sign. Plus (+) is understood if a minus (-) is not specified. Legal entries:

-400 to 99999

.

10.3.5 Set Identifier: GZE (M) (Target Grid Zone)

Field 1 - Grid Zone (M). One (1) to three (3) characters used to specify the earth hemisphere and grid zone designator. One (1) or two (2) digits used to specify the grid zone at the location preceded by one character used to specify the earth hemisphere. Grid zones in the southern hemisphere shall be preceded by a minus (-) sign. Plus (+) is understood if a minus (-) is not specified but may be entered. Legal entries:

Northern: 1 to 60
Southern: -1 to -60.

10.3.6 Set Identifier: TST (M) (Target Description)

Field 1 - Target Type (M). Three (3) to six (6) letters used to specify the target type. See Table 17. Legal Entries for Target Type/Subtype

Field 2 - Target Subtype (M). Two (2) to six (6) letters used to specify the target subtype. See Table 17. Legal Entries for Target Type/Subtype

Field 3 - Degree of Protection (C). Four (4) to six (6) letters used to specify the degree of personnel protection. See Table 18. Legal Entries for Degree of Protection.

10.3.7 Set Identifier: STR (M) (Target Strength)

Field 1 - Number of Target Elements (M). One (1) to four (4) digits used to specify the number of target elements. Legal entries:

1 to 9999.

10.3.8 Set Identifier: SIZ (M) (Target Size).

Field 1 - Length (M). One (1) to four (4) digits used to specify either the length (rectangular) or radius (circular) in meters. Legal entries:

1 to 9999.

Field 2 - Width (O). One (1) to four (4) digits used to specify the width in meters. Legal entries:

1 to 9999.

Field 3 - Attitude (C). Four (4) digits used to specify the azimuth in mils of the longest axis in mils. Legal entries:

0000 to 6399.

10.3.9 Set Identifier: RVA (O) (Report Value Accuracy)

Field 1 - Report Accuracy (M). One (1) to three (3) digits used to specify the accuracy of the target location in meters. Legal entries:

1 to 999.

10.3.10 Set Identifier: TRJ (O) (Trajectory Type).

Field 1 - Trajectory Type (M). Three (3) or four (4) letters used to specify the type of trajectory. Legal entries:

LOW - Low Angle
HIGH - High Angle.

10.3.11 Set Identifier: MUE (O) (Munitions in Effect)

Field 1 - Number of Volleys/Rockets (C). One (1) or two (2) digits used to specify the number of volleys or the number of rockets to be fired in effect. Legal entries:

1 to 99.

Field 2 - Fire For Effect Projectile (O). Three (3) letters used to specify the fire for effect projectile. See Legal Entries Table 3 (Legal Entries for Fire Support Ammunition).

Field 3 - Fire For Effect Fuze (C). Two (2) to four (4) letters used to specify the fire for effect fuze. See Legal Entries Table 3 (Legal Entries for Fire Support Ammunition).

10.3.12 Set Identifier: EFR (C) (Effects Required)

Field 1 - Effects Required (M). One (1) or two (2) digits used to specify the percentage of effects required on the target. Legal entries:

1 to 30.

10.3.13 Set Identifier: MOC (M) (Method of Control)

Field 1 - Method of Control (M). Two (2) or three (3) letters used to specify the method of control. Legal entries:

AMC - At My Command
RWR - Restricted When Ready
TOT - Time On Target
TTF - Time to Fire
WR - When Ready.

Field 2 - Time (C). Four (4) digits used to specify the time on target, the time to fire or the beginning of the "Restricted When Ready" period in hours and minutes. Legal entries:

Hour: 00 to 23
Minutes: 00 to 59.

Field 3 - Duration of Time Window (C). Three (3) digits used to specify the length of the "Restricted When Ready" period, in minutes. Legal entries:

001 to 999.

10.3.14 Set Identifier: FIRINT (C) (Firing Interval)

Field 1 - Interval Between Volleys (M). One (1) to three (3) digits used to specify the firing interval between volleys expressed in seconds. Legal entries:

1 to 999.

Field 2 - Duration (C). One (1) to three (3) digits used to specify the duration of fire in minutes. Legal entries:
1 to 999.

10.3.15 Set Identifier: EOM (C) (End of Mission)

Field F - End of Mission Indicator (M). One (1) letter used to specify that end of mission processing shall occur upon completion of fire:
Y - End of Mission

10.4 Message Processing

10.4.1 CASES

CASE: Initial Call For Fire (NOT End of Mission)
THIS CASE REQUIRES
Set TNO
AND Set GRID
AND Set GZE
AND Set MOC
AND Set TST
AND Set STR
AND Set SIZ
AND NOT Set EOM
END CASE

CASE: Initial Call for Fire (End of Mission)
THIS CASE REQUIRES
Set TNO
AND Set GRID
AND Set GZE
AND Set MOC
AND Set TST
AND Set STR
AND Set SIZ
AND Set EOM specified "Y" (End of Mission)
END CASE

10.4.2 Conditions

10.4.3 IF Field 2 (Target Width) of Set SIZ (Target Size) is specified
THEN Field 3 (Attitude) of Set SIZ shall be specified
ELSE Field 3 shall NOT be specified
ENDIF

10.4.4 IF Field 1 (Number of Volleys) of Set MUE (Fire For Effect Munitions) is specified
OR Set NUN (Number of Weapons) is specified
OR Set FIRINT (Firing Interval) is specified

THEN Set EFR (Effects Required) shall NOT be specified
ENDIF

10.4.5 IF Field 1 (Number of Volleys/Rockets) of Set MUE (Munitions in Effect) is specified
AND Field 2 (Fire for Effect Projectile) of Set MUE (Munitions in Effect) is NOT specified with a “J” code
THEN Set NUN (Number of Weapons) shall be specified
ENDIF

10.4.6 IF Set FIRINT (Firing Interval) is specified
AND Field 2 (Fire for Effect Projectile) of Set MUE (Munitions in Effect) is NOT specified with a “J” code
THEN Set NUN (Number of Weapons) shall be specified
ENDIF

10.4.7 IF Set EFR (Effects Required) is specified
THEN Field 1 (Number of Volleys) of Set MUE (Munitions in Effect) shall NOT be specified
AND Set NUN (Number of Weapons) shall NOT be specified
AND Set FIRINT (Firing Interval) shall NOT be specified
ENDIF

10.4.8 IF Field 1 (Method of Control) of Set MOC (Method of Control) is specified "TOT" (Time on Target)
OR Field 1 is specified “TTF” (Time to Fire)
OR Field 1 is specified “RWR” (Restricted When Ready)
THEN Field 2 (Time) of Set MOC shall be specified
ELSE Field 2 shall NOT be specified
ENDIF

10.4.9 IF Set FIRINT (Firing Interval) is specified
AND Field 1 (Number of Volleys) of Set MUE (Munitions in Effect) is NOT specified
THEN Field 2 (Duration) of Set FIRINT shall be specified
ELSE Field 2 shall NOT be specified
ENDIF

10.4.10 IF Set FIRINT (Firing Interval) is specified
THEN Only one iteration of Set MUE (Munitions in Effect) shall be specified
ENDIF

10.4.11 IF Field 1 (Target Type) of Set TST (Target Description) is specified “PERS” (Personnel)
THEN Field 3 (Degree of Protection) shall be specified
ENDIF

10.4.12 IF Field 1 (Method of Control) of Set MOC (Method of Control) is specified “AMC” (At My Command)
THEN Set EOM (End of Mission) shall NOT be specified

ENDIF

10.4.13 IF Field 2 (Fire for Effect Projectile) of Set MUE (Munitions in Effect) is specified with a “J” code
THEN Set NUN (Number of Weapons) shall NOT be specified
ENDIF

10.4.14 IF Field 2 (Fire for Effect Projectile) of Set MUE (Munitions in Effect) is specified with a non "J" code
THEN Field 3 (Fire for Effect Fuze) shall be specified
ELSE Field 3 shall not be specified
ENDIF

10.4.15 IF Field 1 (Method of Control) of Set MOC (Method of Control) is specified “RWR” (Restricted When Ready)
THEN Field 3 (Duration of Time Window) of Set MOC shall be specified
ELSE Field 3 shall NOT be specified
ENDIF

10.4.16 IF Field 1 (Method of Control) of Set MOC (Method of Control) is specified “RWR” (Restricted When Ready)
THEN Set EFR (Effects Required) shall NOT be specified
ENDIF

10.5 Defaults

10.5.1 IF Field 1 (Trajectory Type) of Set TRJ (Trajectory Type) is NOT specified
THEN Field 1 shall default to "LOW" (Low Angle)
ENDIF

10.6 Expected Response

10.6.1 A response message shall be generated and transmitted to the FM.CFF originator in accordance with Figure 13. Fire Mission Processing.

10.6.2 IF the call for fire is accepted by the supporting nation
THEN A single consolidated FM.MTO response message shall be transmitted to the originator
ENDIF

NOTE: The mission data specified by the FM.MTO response message shall include the contributions of any other nations that may be reinforcing the mission

10.6.3 IF the call for fire is NOT accepted by the supporting nation
THEN A single FM.FMC response message, with Field 1 (Report to Observer) of Set ROB (Observer Report) specified “CANTCO” (Cannot Comply), shall be transmitted to the originator
ENDIF

10.7 Special Considerations

0.7.1 IF Field 1 (Target Type) of Set TST (Target Description) is specified other than "PERS" (Personnel)

AND	Field 3 (Degree of Protection) of Set TST is specified
THEN	The target shall be engaged as a personnel type target with the specified degree of protection
AND	The original target type specified by Field 1 (Target Type) of Set TST shall be maintained for record purposes
ENDIF14	

10.7.2 Volleys type targets shall NOT be converted to effects type targets, reference Table 23. Attack Method for Target Type

10.7.3 IF a volleys type target is received with effects specified

THEN	The target will be engaged according to national procedures
ENDIF	

10.7.4 IF Set NUN (Number of Weapons) is NOT specified

AND	Set EFR (Effects Required) is NOT specified
AND	Field 1 (Number of Volleys) of Set MUE (Fire for Effect Munitions) is NOT specified
THEN	The receiving system shall determine the number of fire units and volume of fire in accordance with national procedures
ENDIF	

10.7.5 IF the Target specified by Set TNO (Target Number) is in an active status

THEN	The message will be rejected
AND	An FM.FMC returned to the message originator
AND	Field 1 (Report to Observer) of Set ROB specified “CANTCO” (Cannot Comply)
AND	Field 2 (Reason Code) shall be specified “1” (Fire Mission already active)
ENDIF	

10.7.6 IF only Field 1 (Target Length) of Set SIZ (Target Size) is specified

THEN	The target shall be a circular target with the specified radius
AND	Centered at the target location
ENDIF	

10.7.7 IF Field 1 (Target Length) of Set SIZ (Target Size) is specified

AND	Field 2 (Target Width) of Set SIZ is specified
AND	Field 3 (Attitude) of Set SIZ is specified
THEN	The target shall be a rectangle centered at the target location
AND	At an attitude specified by Field 3 (Attitude) of Set SIZ
ENDIF	

[14] This is an example of the allowances that have to be made for national systems and the processing they are able to undertake. Not all systems are able to differentiate between tank in the open and tank dug in when performing weight of fire calculations.

10.7.8 IF Set EOM (End of Mission) is specified "Y" (End of Mission)

OR	The mission is fired using MLRS
THEN	End of mission processing shall be initiated in accordance with national procedures after firing has been completed
AND	An FM.FMC shall be returned to the FM.CFF originator with Set ROB (Observer Report) specified “EXECOM” (Execution Complete)
ENDIF	

10.7.9 IF Set TRJ (Trajectory) is specified

AND	The mission is to employ MLRS munitions
THEN	Set TRJ shall be processed according to national procedures
ENDIF	

10.7.10 IF Set FIRINT (Firing Interval) is specified

AND	The mission is to employ MLRS munitions
THEN	Set FIRINT shall be processed according to national procedures
ENDIF	

10.7.11 F Set MUE (Fire for Effect Munitions) is specified

THEN	Only one iteration shall be specified
ENDIF	

10.7.12 IF the iterations of Set MUE (Munitions in Effect) imply a mixed load on a MLRS launcher

THEN	The mission shall be rejected
ENDIF	

10.7.13 IF Field 1 (Method of Control) of Set MOC (Method of Control) is specified “RWR” (Restricted When Ready)

THEN	Field 2 (Date-Time) of Set MOC shall specify the earliest permitted firing time in the execution of the specified method of fire
AND	The date-time specified by Field 2, when extended by the period specified by Field 3 (Duration of Time Window) of Set MOC, shall specify the latest permitted time on target of any projectile fired in execution of the specified method of fire
ENDIF	

10.7.14 IF Field 1 (Method of Control) of Set MOC (Method of Control) is specified “RWR” (Restricted When Ready)

AND	Set FIRINT (Firing Interval) is specified
THEN	The duration of fire specified by Field 2 (Duration) of Set FIRINT or calculated from Field 1 (Interval) of Set FIRINT and Field 1 (Number of Volleys/Rockets) of Set MUE (Munitions in Effect) shall NOT exceed the period specified by Field 3 (Duration of Firing Time Window)
ENDIF	

11. FM.FMC

11.1 General

11.1.1 This message will be used to transmit a command to Check Fire, Cancel Check Fire, Cease Loading, Cancel Cease Loading, and Fire, to transmit Ready, Shot, Rounds Complete, and Cannot Comply to the observer and to transmit the completion of a fire mission.

11.2 Message Content

Ser	Set ID	Set OCC	Fld OCC	Fld No	Field Title	Field Length
A	MSGID	M			MESSAGE IDENTIFICATION	
			M	1	Message Type	6X
			M	2	Originator	13X
B	CMD	C			FIRE MISSION COMMAND	
			M	1	Fire Mission Command	4-6A
C	DTG	C			DATE-TIME	
			M	1	Date-Time Group	6N
D	FPN	C			FIRE PLAN NAME	
			M	1	Fire Plan Name	1-6AN
E	TNO	C			TARGET NUMBER	
			M	1	Target Number	6AN
F	TGTINST	O			TARGET INSTANCE	
			M	1	Target Instance	1-2N
G	ROB	C			OBSERVER REPORT	
			M	1	Report To Observer	4-6A[15]
			C	2	Reason Code	1-2N
H	EOM	C			END OF MISSION	
			M	1	End of Mission Indicator	1A

[15] SHOT only requires 4 letters.

11.3 Set and Field Definitions

11.3.1 Set Identifier: MSGID (M) (Message Identification)

Field 1 - Message Type (M). Six (6) characters used to specify the message type. Legal entry:

FM.FMC.

Field 2 - Originator (M). Thirteen (13) characters used to specify the logical name of the message originator. Legal entries:

Digits: 0 to 9
Letters: A to Z
Special Character : Period (.)
Blank character (Hex 20).

The period is only valid in the second, fourth, sixth, and tenth character positions, and shall always be present in those character positions.

11.3.2 Set Identifier: CMD (C) (Fire Mission Command)

Field 1 - Fire Mission Command (M). Four (4) to six (6) letters used to specify the action required. Legal entries:

CKFIRE - Check Fire
CANCKF - Cancel Check Fire
CELOAD - Cease Loading
CANCLD - Cancel Cease Loading
FIRE - Command to Execute.

11.3.3 Set Identifier: DTG (C) (Date-Time)

Field 1 - Date-Time Group (M). Six (6) digits used to specify the ZULU date-time of the order or reported event. The first two (2) digits represent the day of the month, the second two (2) digits, the hour of the day, and the final two (2) digits, the minutes of the hour. Legal entries:

Day: 01 to 31
Hour: 00 to 23
Minutes: 00 to 59.

11.3.4 Set Identifier: FPN (C) (Fire Plan Name)

Field 1 - Fire Plan Name (M). One (1) to six (6) characters used to specify the name of the fire plan to which the information relates. Legal entries:

Digits: 0 to 9
Letters: A to Z.

11.3.5 Set Identifier: TNO (C) (Target Number)

Field 1 - Target Number (M). Six (6) characters used to specify the target number. The first two (2) characters shall be letters followed by four (4) digits. Legal entries:

Letters: AA to ZZ
Digits: 0001 to 9999.

11.3.6 Set Identifier: TGINST (O) (Target Instance)

Field 1 - Target Instance (M). One (1) or two (2) digits used to specify a unique numeric value to identify each instance of a specified target number, which is repeated in the plan. Legal entries:

1 to 99.

11.3.7 Set Identifier: ROB (C) (Observer Report)

Field 1 - Report To Observer (M). Four (4) to six (6) letters used to specify the type of report to the observer. Legal entries:

READY - Ready to Fire
COMPLT - Rounds Complete
CANTCO - Cannot Comply
SHOT - Firing Commenced
EXECOM - Execution Complete.

Field 2 - Reason Code (C). One (1) to two (2) digits used to specify the reason for "Cannot Comply". See Table 26 Legal Entries for Reason Codes for CANTCO.

11.3.8 Set Identifier: EOM (C) (End of Mission)

Field 1 - End of Mission Indicator (M). One (1) letter used to specify that end of mission processing is to occur. Legal entries:

Y - End of Mission

11.4 Message Processing

11.4.1 Cases

CASE: Check Fire/Cancel Check Fire All Missions
THIS CASE REQUIRES
Set CMD specified "CKFIRE" OR "CANCKF"
AND NOT Set FPN
AND NOT Set TNO
AND NOT Set ROB
AND NOT Set TGINST
AND NOT Set EOM
END CASE

CASE: Check Fire/Cancel Check Fire All Missions by Fire Plan
THIS CASE REQUIRES
Set CMD specified "CKFIRE" OR "CANCKF"
AND Set FPN
AND NOT Set TNO
AND NOT Set ROB
AND NOT Set TGINST
AND NOT Set EOM
END CASE

CASE: Check Fire/Cancel Check Fire By Target
THIS CASE REQUIRES
Set CMD specified "CKFIRE" OR "CANCKF"
AND Set TNO
AND NOT Set FPN
AND NOT Set ROB
AND NOT Set TGINST
AND NOT Set EOM
END CASE

CASE: Cease Loading/Cancel Cease Loading All Active Missions
THIS CASE REQUIRES
Set CMD specified "CELOAD" OR "CANCLD"
AND NOT Set FPN
AND NOT Set TNO
AND NOT Set ROB
AND NOT Set TGINST
AND NOT Set EOM
END CASE

CASE: Cease Loading/Cancel Cease Loading All Active Missions by Fire Plan
THIS CASE REQUIRES
Set CMD specified "CELOAD" OR "CANCLD"
AND Set FPN
AND NOT Set TNO
AND NOT Set ROB
AND NOT Set TGINST
AND NOT Set EOM
END CASE

CASE: Cease Loading/Cancel Cease Loading By Target
THIS CASE REQUIRES
Set CMD specified "CELOAD" OR "CANCLD"
AND Set TNO
AND NOT Set FPN
AND NOT Set ROB
AND NOT Set TGINST
AND NOT Set EOM
END CASE

CASE: Observer Command To Fire
THIS CASE REQUIRES
Set CMD specified "FIRE"
AND Set TNO
AND NOT Set FPN
AND NOT Set ROB
AND NOT Set TGINST
AND NOT Set EOM
END CASE

CASE: Report To Observer
THIS CASE REQUIRES
Set TNO
AND Set ROB specified "READY" (Ready to Fire) OR “SHOT” (Firing Commenced) OR “COMPLT” (Rounds Complete)
AND NOT Set CMD
AND NOT Set EOM
AND NOT Set FPN
AND NOT Set TGINST
END CASE

CASE: Transmit "Execution Complete for Current Operations"
THIS CASE REQUIRES
Set TNO
AND Field 1 (Report to Observer) of Set ROB (Observer Report) specified "EXECOM" (Execution Complete)
AND NOT Set CMD
AND NOT Set EOM
AND NOT Set FPN
AND NOT Set TGINST
END CASE

CASE: Observer Command to Fire with End of Mission
THIS CASE REQUIRES
Set CMD specified “FIRE”
AND Set TNO
AND Set EOM
AND NOT Set FPN
AND NOT Set ROB
AND NOT Set TGINST
END CASE

CASE: Transmit “Rounds complete” on a Fire Plan target engagement within the Fire Plan
THIS CASE REQUIRES
Field 1 (Report to Observer) of Set ROB (Observer Report) specified "COMPLT" (Rounds Complete)
AND Set FPN
AND Set TNO
AND NOT Set CMD
AND NOT Set EOM
END CASE

CASE: Rejection of a command on a Fire Plan
THIS CASE REQUIRES
Set FPN
AND Field 1 (Report to Observer) of Set ROB (Observer Report) specified "CANTCO" (Cannot Comply)
AND NOT Set TNO
AND NOT Set CMD

AND NOT Set EOM
AND NOT Set TGINST
END CASE

CASE: Rejection of a Fire Mission, an Adjustment, or a Command on a Target
THIS CASE REQUIRES
Set TNO
AND Field 1 (Report to Observer) of Set ROB (Observer Report) specified "CANTCO" (Cannot Comply)
AND NOT Set FPN
AND NOT Set CMD
AND NOT Set EOM
AND NOT Set TGINST
END CASE

11.4.2 Conditions

IF Set EOM (End of Mission) is specified
THEN Set CMD (Fire Mission Command) shall be specified “FIRE”
AND Set TNO (Target Number) shall be specified
AND Set ROB (Observer Report) shall NOT be specified
AND Set FPN (Fire Plan Name) shall NOT be specified
ENDIF

IF Set ROB (Observer Report) is specified
THEN Set CMD (Fire Mission Command) shall NOT be specified
AND Set EOM shall NOT be specified
ENDIF

IF Set CMD (Fire Mission Command) is specified
THEN Set ROB (Observer Report) shall NOT be specified
ELSE Set ROB shall be specified
ENDIF

IF Field 1 (Report to Observer) of Set ROB (Observer Report) specified "CANTCO" (Cannot Comply)
THEN Field 2 (Reason Code) of Set ROB shall be specified
ELSE Field 2 shall NOT be specified
ENDIF

IF Set ROB (Observer Report) is specified
AND Field 1 (Report to Observer) of Set ROB is specified “SHOT”
THEN Set DTG shall be specified
ENDIF

11.5 Expected Response

11.5.1 A response message shall be generated and transmitted to the FM.FMC originator in accordance with the message flow diagrams for fire mission processing in Figure 13. Fire Mission Processing.

11.6 Special Considerations

11.6.1 IF Set CMD (Fire Mission Command) is specified "FIRE"
AND The Method of Control for the target specified by Set TNO (Target Number) had NOT been previously set to "AMC" (At My Command)
THEN The message will be rejected
AND An FM.FMC returned to the message originator
AND Field 1 (Report to Observer) of Set ROB specified "CANTCO" (Cannot Comply)
AND Field 2 (Reason Code) shall be specified “8” (Mission not at my command)
ENDIF

11.6.2 IF Set EOM (End of Mission) is specified "Y" (End of Mission)
THEN The receiving system shall initiate end of mission processing in accordance with national procedures.
ENDIF

11.6.3 IF Set CMD (Fire Mission Command) is specified “CKFIRE” (Check Fire)
THEN The message priority shall be one (1)
ELSE The message priority shall be two (2)
ENDIF

11.6.4 IF Set CMD (Fire Mission Command) is specified "CANCKF” OR ”CANCLD" (Cancel Check Fire/Cancel Cease Loading)
AND A corresponding Check Fire/Cease Loading order from the same originator, with the same combination of Set FPN and Set TNO specified with the same data content, if they are specified, does NOT exist at the receiving system
THEN The message will be rejected
AND An FM.FMC returned to the message originator
AND Field 1 (Report to Observer) of Set ROB specified "CANTCO" (Cannot Comply)
AND Field 2 (Reason Code) shall be specified “10” (Check Fire /Cease Loading not in force)
ENDIF

11.6.5 IF the fire plan specified by Set FPN (Fire Plan Name) is NOT in an active status
THEN The message will be rejected
AND An FM.FMC returned to the message originator
AND Field 1 (Report to Observer) of Set ROB specified "CANTCO" (Cannot Comply)
AND Field 2 (Reason Code) shall be specified “3” (Fire Plan not active)
ENDIF

11.6.6 IF the target specified by Set TNO (Target Number) is NOT in an active status
THEN The message will be rejected
AND An FM.FMC returned to the message originator

AND Field 1 (Report to Observer) of Set ROB specified "CANTCO" (Cannot Comply)
AND Field 2 (Reason Code) shall be specified “2” (Fire mission not active)
ENDIF

11.6.7 IF Set CMD (Fire Mission Command) is specified
AND The mission order specified by the message is rejected by the receiving nation
THEN The receiving nation shall NOT close the mission
ENDIF

11.6.8 IF Set CMD (Fire Mission Command) is specified “CKFIRE” (Check Fire) OR “CELOAD” (Cease Loading)
THEN This order shall be applied in addition to any existing Check Fire and Cease Loading orders that either are not of the same type as this order or were received from a different originator
ENDIF

11.6.9 IF Two or more messages are received with Set CMD (Fire Mission Command) specified “CKFIRE” (Check Fire) OR “CELOAD” (Cease Loading)
AND The messages are identical
OR The messages are identical except for Set DTG (Date-Time)
THEN All such messages shall be considered to specify the same single Check Firing/Cease Loading order
AND The order shall be cancelled on receipt of a single FM.FMC message specifying a corresponding Check Firing/Cease Loading cancellation order, irrespective of the number of identical messages that were previously received specifying the order
ENDIF

11.6.10 IF Set CMD (Fire Mission Command) is specified “CKFIRE” (Check Fire)
AND Set FPN (Fire Plan Name) is NOT specified
AND Set TNO (Target Number) is NOT specified
THEN The message specifies an order to Check Fire on All Missions
AND The order shall be applied to all existing missions (in both current operations and fire plans) on targets within the manoeuvre area of responsibility of the originator of the order
AND The order shall be applied to all subsequently accepted missions (in both current operations and fire plans) on targets within the manoeuvre area of responsibility of the originator of the order
AND The order shall remain in force until cancelled by an FM.FMC message, from the same originator, with Set CMD specified “CANCKF”, Set FPN NOT specified and Set TNO NOT specified
ENDIF

11.6.11 IF Set CMD (Fire Mission Command) is specified “CELOAD” (Cease Loading)
AND Set FPN (Fire Plan Name) is NOT specified
AND Set TNO (Target Number) is NOT specified
THEN The message specifies an order to Cease Loading on All Missions

AND The order shall be applied to all existing missions (in both current operations and fire plans) on targets within the manoeuvre area of responsibility of the originator of the order
AND The order shall remain in force until cancelled by an FM.FMC message, from the same originator, with Set CMD specified "CANCLD", Set FPN NOT specified and Set TNO NOT specified
ENDIF

11.6.12 IF Set CMD (Fire Mission Command) is specified "CKFIRE" (Check Fire)
AND Set FPN (Fire Plan Name) is specified
AND Set TNO (Target Number) is NOT specified
THEN The message specifies an order to Check Fire on All Missions in a Fire Plan
AND The order shall be applied to all missions in the specified fire plan
AND The order shall remain in force until cancelled by an FM.FMC message, from the same originator, with Set CMD specified "CANCKF" and Set FPN specified with the same fire plan name as specified in this order
ENDIF

11.6.13 IF Set CMD (Fire Mission Command) is specified "CELOAD" (Cease Loading)
AND Set FPN (Fire Plan Name) is specified
AND Set TNO (Target Number) is NOT specified
THEN The message specifies an order to Cease Loading on All Missions in a Fire Plan
AND The order shall be applied to all missions in the specified fire plan
AND The order shall remain in force until cancelled by an FM.FMC message, from the same originator, with Set CMD specified "CANCLD" and Set FPN specified with the same fire plan name as specified in this order
ENDIF

11.6.14 IF Set CMD (Fire Mission Command) is specified "CKFIRE" (Check Fire)
AND Set TNO (Target Number) is specified
AND Set FPN (Fire Plan Name) is NOT specified
THEN The message specifies an order to Check Fire on Missions on a Target
AND The order shall be applied to all existing missions (in both current operations and fire plans) on the specified target
AND The order shall be applied to all subsequently accepted missions (in both current operations and fire plans) on the specified target
AND The order shall remain in force until cancelled by an FM.FMC message, from the same originator, with Set CMD specified "CANCKF" and Set TNO specified with the same target number as specified in this order
ENDIF

11.6.15 IF Set CMD (Fire Mission Command) is specified "CELOAD" (Cease Loading)
AND Set TNO (Target Number) is specified
AND Set FPN (Fire Plan Name) is NOT specified
THEN The message specifies an order to Cease Loading on Missions on a Target

AND The order shall be applied to all existing missions (in both current operations and fire plans) on the specified target

AND The order shall remain in force until cancelled by an FM.FMC message, from the same originator, with Set CMD specified “CANCLD” and Set TNO specified with the same target number as specified in this order

ENDIF

11.6.16 IF Set CMD (Fire Mission Command) is specified “CANCKF” (Cancel Check Fire) or “CANCLD” (Cancel Cease Loading)

AND The order that is cancelled by this message is the only extant Check Fire/ Cease Loading order that applies to a particular mission

AND The mission is a Current Operations mission

AND Execution of the currently specified method of fire had commenced before any Check Fire/Cease Loading order was applied to the mission

THEN Execution of the mission shall be resumed from the point in the current method of fire at which it had been halted

AND Firing shall continue until the remaining rounds have been fired in full or, in an RWR (Restricted When Ready) mission, only until the end of the RWR period if this occurs sooner

ENDIF

11.6.17 IF Set CMD (Fire Mission Command) is specified “CANCKF” (Cancel Check Fire) or “CANCLD” (Cancel Cease Loading)

AND The order that is cancelled by this message is the only extant Check Fire/ Cease Loading order that applies to a particular mission

AND The mission is a Current Operations mission

AND Execution of the currently specified method of fire had NOT commenced before any Check Fire/Cease Loading order was applied to the mission

AND The Method of Control currently specified for the mission is “Restricted When Ready” OR “Time on Target” OR “Time to Fire”

AND It is still possible to execute the mission in accordance with the timing specified for the Method of Control

THEN The mission shall be resumed in accordance with the current mission orders

ENDIF

11.6.18 IF Set CMD (Fire Mission Command) is specified “CANCKF” (Cancel Check Fire) OR “CANCLD” (Cancel Cease Loading)

AND The order that is cancelled by this message is the only extant Check Fire/ Cease Loading order that applies to a particular mission

AND The mission is a Current Operations mission

AND Execution of the currently specified method of fire had NOT commenced before any Check Fire/Cease Loading order was applied to the mission

AND The Method of Control currently specified for the mission is “Restricted When Ready” OR “Time on Target” OR “Time to Fire”

AND The mission can no longer be fired in accordance with the timing specified for the Method of Control

THEN The mission shall NOT be resumed until valid amendments to the mission orders are specified by the mission originator

ENDIF

11.6.19 IF Set CMD (Fire Mission Command) is specified “CANCKF” (Cancel Check Fire) OR “CANCLD” (Cancel Cease Loading)

AND The order that is cancelled by this message is the only extant Check Fire/ Cease Loading order that applies to a particular mission

AND The mission is a Scheduled mission in a Fire Plan

THEN Execution of the mission shall be resumed from the point that it would have reached if Check Fire/Cease Loading had not been imposed (i.e. the timing of the fire plan schedule shall be maintained)

ENDIF

11.6.20 IF Set ROB (Observer Report) is specified "SHOT" (Firing Commenced)

THEN The date-time specified by Field 1 (Date-Time Group) of Set DTG (Date-Time) shall specify the time of firing of the first projectile in the execution of the method of fire to which the report relates

ENDIF

11.6.21 IF Field 1 (Report to Observer) of Set ROB (Observer Report) is specified “COMPLT” (Rounds Complete)

AND The target specified by Set TNO (Target Number) exists two or more times in the fire plan specified by Set FPN (Fire Plan Name)

THEN Set TGINST (Target Instance) shall be specified

ENDIF

12 FM.MTO

12.1 General

12.1.1 This message will be used to transmit a message to observer in response to a call for fire on a target of opportunity.

12.2 Message Content

Ser	SET ID	Set OCC	Fld OCC	Fld No	Field Title	Field Length
A	MSGID	M			MESSAGE IDENTIFICATION	
			M	1	Message Type	6X
			M	2	Originator	13X
B	TNO	M			TARGET NUMBER	
			M	1	Target Number	6AN
C	NUN	C			NUMBER OF WEAPONS	
			M	1	Number of Guns	1-2N
D	MUE	M			MUNITIONS IN EFFECT	
			M	1	Number of Volleys/Rockets	1-2N
			M	2	Fire For Effect Projectile	3A
			C	3	Fire For Effect Fuze	2-4A[16]
E	TRJ	O			TRAJECTORY TYPE	
			M	1	Trajectory Type	3-4A
F	MOC	M			METHOD OF CONTROL	
			M	1	Method of Control	2-3A
			C	2	Time[17]	4N
G	SMD	O			OBSERVER DATA	
			O	1	Time of Flight	3-5NS
			O	2	Range Probable Error	1-3N
			O	3	Angle T	4N

[16] NABK (AOP 37 – Software Requirements for NABK Release 8 p 8) . See AOP 29 NATO Indirect Fire Interchangability Jun 2004 Edn 3. (Allied Operational Publication) uses 4AN values for fuze type.

[17] Time window has been removed as this is a CP currently being considered by ASCA and will be removed in ASCA V5.

12.3 Set and Field Definitions

12.3.1 Set Identifier: MSGID (M) (Message Identification)

Field 1 - Message Type (M). Six (6) characters used to specify the message type. Legal entry:

FM.MTO.

Field 2 - Originator (M). Thirteen (13) characters used to specify the logical name of the message originator. Legal entries:

Digits: 0 to 9
Letters: A to Z
Special Character : Period (.)
Blank character (Hex 20).
The period is only valid in the second, fourth, sixth, and tenth character positions, and shall always be present in those character positions.

12.3.2 Set Identifier: TNO (M) (Target Number)

Field 1 - Target Number (M). Six (6) characters used to specify the target number. The first two (2) characters shall be letters followed by four (4) digits. Legal entries:

Letters: AA to ZZ
Digits: 0001 to 9999.

12.3.3 Set Identifier: NUN (C) (Number of Weapons)

Field 1 - Number of Guns (M). One (1) or two (2) digits used to specify the number of guns to fire for effect. Legal entries:

1 to 99.

12.3.4 Set Identifier: MUE (M) (Munitions in Effect)

Field 1 - Number of Volleys/Rockets (M). One (1) or two (2) digits used to specify the number of volleys or number of rockets to be fired for effect. Legal entries:

1 to 99.

Field 2 - Fire For Effect Projectile (M). Three (3) letters used to specify the fire for effect projectile type. See Table 22. Legal Entries for Fire Support Ammunition for the codes.

Field 3 - Fire For Effect Fuze (C). Two (2) to four (4) letters used to specify the fire for effect fuze type. See Table 22. Legal Entries for Fire Support Ammunition.

NOTE: Set MUE may be repeated as a group up to two (2) times, initial plus one (1). The first iteration shall be the first selected shell fuze combination, and the second iteration, the second selected shell/fuze combination. However, Special Considerations state that currently only one iteration shall be specified.

12.3.5 Set Identifier: TRJ (O) (Trajectory Type)

Field 1 - Trajectory Type (M). Three (3) or four (4) letters used to specify the type of trajectory. Legal entries:

HIGH - High Angle
LOW - Low Angle.

12.3.6 Set Identifier: MOC (M) (Method of Control)

Field 1 - Method of Control (M). Two (2) or three (3) letters used to specify the method of control. Legal entries:

AMC - At My Command
RWR - Restricted When Ready
TOT - Time On Target
TTF - Time to Fire
WR - When Ready.

Field 2 - Time (C). Four (4) digits used to specify the time on target, the time to fire or the beginning of the "Restricted When Ready" period in hours and minutes. Legal entries:

Hour: 00 to 23
Minutes: 00 to 59.

12.3.7 Set Identifier: SMD (O) (Observer Data)

Field 1 - Time of Flight (O). Three (3) to five (5) characters used to specify the time of flight of the rounds to the nearest tenth of a second. The definition of Time of Flight if more than one unit is firing the mission shall be the longest time of flight. Legal entries:

1 to 999.9.

Field 2 - Range Probable Error (O). One (1) to three (3) digits used to specify the range probable error in meters. Legal entries:

0 to 999.

Field 3 - Angle T (O). Four (4) digits used to specify the Angle T (Observer-Target-Gun-Angle) in mils. The definition of Angle T is the smaller interior angle formed at the target by the intersection of the Gun-Target and Observer-Target lines and will never be larger than 3,200 mils. Legal entries:

0000 to 3200.

12.4 Message Processing

12.4.1 Cases

None.

12.4.2 Conditions

IF Field 1 (Method of Control) of Set MOC (Method of Control) is specified "TOT" (Time on Target)

OR Field 1 is specified "TTF" (Time to Fire)

OR Field 1 is specified “RWR” (Restricted When Ready)
THEN Field 2 (Time) of Set MOC shall be specified
ELSE Field 2 shall NOT be specified
ENDIF

IF Field 1 (Number of Volleys/Rockets) of Set MUE (Munitions in Effect) is specified
AND Field 2 (Fire for Effect Projectile) is NOT specified with a “J” code
THEN Set NUN (Number of Weapons) shall be specified
ENDIF

IF field 2 (Fire for Effect Projectile) of Set MUE (Munitions in Effect) is specified with a non “J” code
THEN Field 3 (Fire for Effect Fuze) shall be specified
ELSE Field 3 shall NOT be specified
ENDIF

12.5 Expected Response

No response is expected by the FM.MTO message originator.

12.6 Special Considerations

12.6.1 IF Set TRJ (Trajectory Type) is specified
AND The mission is to employ MLRS munitions
THEN Set TRJ shall be processed according to national procedures
ENDIF

12.6.2 IF Set MUE (Munitions in Effect) is specified
THEN Only one iteration shall be specified
ENDIF

12.6.3 IF Field 1 (Method of Control) of Set MOC (Method of Control) is specified “RWR” (Restricted When Ready)
THEN Field 2 (Date-Time) of Set MOC shall specify the earliest permitted firing time in the execution of the specified method of fire
ENDIF

13. FM SUB

13.1 General

13.1.1 This message will be used to transmit updated grid locations, to Repeat Fire for Effect and/or to terminate missions.

13.2 Message Content

Ser	SET ID	Set OCC	Fld OCC	Fld No	Field Title	Field Length
A	MSGID	M			MESSAGE IDENTIFICATION	
			M	1	Message Type	6X
			M	2	Originator	13X
B	TNO	M			TARGET NUMBER	
			M	1	Target Number	6AN
C	TRJ	O			TRAJECTORY TYPE	
			M	1	Trajectory Type	3-4A
D	MUE	O			MUNITIONS IN EFFECT	
			O	1	Number of Volleys/Rockets	1-2N
			O	2	Fire For Effect Projectile	3A
			C	3	Fire For Effect Fuze	2-4A[18]
E	GRID	O			TARGET LOCATION	
			M	1	UTM Easting	6N
			M	2	UTM Northing	1-8N
			M	3	Altitude	1-5NS
F	GZE	C			GRID ZONE	
			M	1	Grid Zone	1-3NS
G	MOC	O			METHOD OF CONTROL	
			M	1	Method of Control	2-3A
			C	2	Time	4N
H	FIRINT	O			FIRING INTERVAL	
			M	1	Interval Between Volleys	1-3N
			C	2	Duration	1-3N
I	EOM	C			END OF MISSION	
			M	1	End of Mission Indicator	1A
J	SUR	O			SURVEILLANCE	
			O	1	Target Disposition	3-4A
			O	2	Number of Casualties	1-4N

13.3 Set and Field Definitions

13.3.1 Set Identifier: MSGID (M) (Message Identification)

Field 1 - Message Type (M). Six (6) characters used to specify the message type. Legal entry:

FM.SUB.

[18] NABK (AOP 37 – Software Requirements for NABK Release 8 p 8) . See AOP 29 NATO Indirect Fire Interchangability Jun 2004 Edn 3. (Allied Operational Publication) uses 4AN values for fuze type.

Field 2 - Originator (M). Thirteen (13) characters used to specify the logical name of the message originator. Legal entries:

Digits: 0 to 9
Letters: A to Z

Special Character : Period (.)
Blank character (Hex 20).
The period is only valid in the second, fourth, sixth, and tenth character positions, and shall always be present in those character positions.

13.3.2 Set Identifier: TNO (M) (Target Number)

Field 1 - Target Number (M). Six (6) characters used to specify the target number. The first two (2) characters shall be letters followed by four (4) digits. Legal entries:

Letters: AA to ZZ
Digits: 0001 to 9999.

13.3.3 Set Identifier: TRJ (O) (Trajectory Type)

Field 1 - Trajectory Type (M). Three (3) or four (4) letters used to specify the type of trajectory. Legal entries:

LOW - Low Angle
HIGH - High Angle.

13.3.4 Set Identifier: MUE (O) (Munitions in Effect)

Field 1 - Number of Volleys/Rockets (O). One (1) or two (2) digits used to specify the number of volleys or the number of rockets to be fired for effect. Legal entries:

1 to 99.

Field 2 - Fire For Effect Projectile (O). Three (3) letters used to specify the fire for effect projectile type. See Table 22. Legal Entries for Fire Support Ammunition
Field 3 - Fire For Effect Fuze (C). Two (2) to four (4) letters used to specify the fire for effect fuze type. See Table 22. Legal Entries for Fire Support Ammunition.

NOTE: Fields 1, 2, and 3 may be repeated as a group up to two (2) times, initial plus one (1). The first iteration shall be the first selected shell/fuze combination, and the second iteration, the second selected shell/fuze combination. However, Special Considerations state that currently only one iteration shall be specified.

13.3.5 Set Identifier: GRID (O) (Target Location)

Field 1 - UTM Easting (M). Six (6) digits used to specify the higher order Easting of the target location in meters. Legal entries:

000000 to 999999.

Field 2 - UTM Northing (M). One (1) to eight (8) digits used to specify the higher order Northing of the target location in meters. Legal entries:

Northern Hemisphere:0 to 10000000
Southern Hemisphere:0 to 11000000.

Field 3 - Altitude (M). One (1) to five (5) characters used to specify the altitude of the

location. Altitudes below sea level shall be preceded by a minus (-) sign. Plus (+) is understood if a minus (-) is not specified. Legal entries:

-400 to 99999.

13.3.6 Set Identifier: GZE (C) (Grid Zone)

Field 1 - Grid Zone (M). One (1) to three (3) characters used to specify the earth hemisphere and grid zone designator. One (1) or two (2) digits used to specify the grid zone at the location preceded by one (1) character used to specify the earth hemisphere. Grid zones in the southern hemisphere shall be preceded by a minus (-) sign. Plus (+) is understood if a minus (-) is not specified but may be entered. Legal entries:

Northern: 1 to 60
Southern: -1 to -60.

13.3.7 Set Identifier: MOC (O) (Method of Control)

Field 1 - Method of Control (M). Two (2) or three (3) letters used to specify the method of control. Legal entries:

AMC - At My Command
RWR - Restricted When Ready
TOT - Time On Target
TTF - Time to Fire
WR - When Ready.

Field 2 - Time (C). Four (4) digits used to specify the time on target, the time to fire or the beginning of the "Restricted When Ready" period in hours and minutes. Legal entries:

Hour: 00 to 23
Minutes: 00 to 59.

13.3.8 Set Identifier: FIRINT (O) (Firing Interval)

Field 1 - Interval Between Volleys (M). One (1) to three (3) digits used to specify the firing interval between volleys expressed in seconds. Legal entries:

1 to 999.

Field 2 - Duration (C). One (1) to three (3) digits used to specify the duration of fire in minutes. Legal entries:

1 to 999.

13.3.9 Set Identifier: EOM (C) (End of Mission)

Field 1 - End of Mission Indicator (M). One (1) letter used to specify that end of mission processing is to occur. Legal entries:

Y - End of Mission

13.3.10 Set Identifier: SUR (O) (Surveillance)

Field 1 - Target Disposition (O). Three (3) or four (4) letters used to specify the disposition of the target at end of mission. See Table 20. Legal Entries for Disposition of Target.

Field 2 - Number of Casualties (O). One (1) to four (4) digits used to specify the number of enemy casualties or equipment at end of mission. Legal entries:

1 to 9999.

13.4 Message Processing

13.4.1 Cases

CASE: Correct Fire By Grid Location
THIS CASE REQUIRES
Set TNO
AND Set GRID
AND Set GZE
AND Set MOC
AND NOT Set EOM
AND NOT Set SUR
END CASE

CASE: Repeat Fire for Effect
THIS CASE REQUIRES
Set TNO
AND Set MOC
AND NOT Set EOM
AND NOT Set SUR
END CASE

CASE: End of Mission
THIS CASE REQUIRES
Set TNO
AND Set EOM specified "Y"
AND NOT Set TRJ
AND NOT Set MUE
AND NOT Set GRID
AND NOT Set GZE
AND NOT Set MOC
AND NOT Set FIRINT
END CASE

CASE: Repeat Fire for Effect End of Mission
THIS CASE REQUIRES
Set TNO
AND Set EOM specified "Y"
AND Set MOC
END CASE

13.4.2 Conditions

IF Field 1 (Method of Control) of Set MOC (Method of Control) is specified "TOT" (Time on Target)
OR Field 1 of Set MOC is specified “TTF” (Time to Fire)

OR Field 1 of Set MOC is specified "RWR" (Restricted When Ready)
THEN Field 2 (Time) of Set MOC shall be specified
ELSE Field 2 shall NOT be specified
ENDIF

IF Set GRID (Target Location) is specified
THEN Set GZE (Grid Zone) shall be specified
ENDIF

IF Field 1 (Method of Control) of Set MOC (Method of Control) is specified “AMC” (At My Command)
THEN Set EOM (End of Mission) shall NOT be specified
ENDIF

IF Field 2 (Fire for Effect Projectile) of Set MUE (Munitions in Effect) is specified with a non "J" code
THEN Field 3 (Fire for Effect Fuze) shall be specified
ELSE Field 3 shall not be specified
ENDIF

IF Set FIRINT (Firing Interval) is specified
AND Field 1 (Number of Volleys) of Set MUE (Munitions in Effect) is NOT specified
THEN Field 2 (Duration) of Set FIRINT shall be specified
ELSE Field 2 shall NOT be specified
ENDIF

IF Set FIRINT (Firing Interval) is specified
THEN Only one iteration of Set MUE (Munitions in Effect) shall be specified
ENDIF

13.4.3 Defaults

IF Field 1 (Trajectory Type) of Set TRJ (Trajectory Type) is NOT specified
THEN Field 1 (Trajectory Type) shall default to that specified in the original Call for Fire or the previous Subsequent Adjustment message
ENDIF

13.5 Expected Response.

13.5.1 A response message shall be generated and transmitted to the FM.SUB originator in accordance with the message flow diagrams, Figure 13. Fire Mission Processing**.**

13.5.2 IF the FM.SUB message specifies a request for additional fire
AND The request is accepted by the supporting nation
THEN A single consolidated FM.MTO response message shall be transmitted to the originator
ENDIF

NOTE: The mission data specified by the FM.MTO response message shall include the contributions of any other nations that may be reinforcing the mission

13.5.3 IF the FM.SUB message specifies a request for additional fire
AND The request is NOT accepted by the supporting nation
THEN A single FM.FMC response message, with Field 1 (Report to Observer) of Set ROB (Observer Report) specified “CANTCO” (Cannot Comply), shall be transmitted to the originator
ENDIF

13.6 Special Considerations

13.6.1 IF Set EOM (End of Mission) is specified "Y"
THEN End of mission processing shall be initiated in accordance with national procedures
AND An FM.FMC shall be returned to the FM.SUB originator with Field 1 (Report to Observer) of Set ROB (Observer Report) specified "EXECOM" (Execution Complete)
ENDIF

13.6.2 IF Field 2 (Fire for Effect Projectile) of Set MUE (Munitions in Effect) is specified
OR Field 3 (Fire for Effect Fuze) of Set MUE is specified
AND The entries specified are different from the initial FM.CFF
THEN The message will be rejected
AND An FM.FMC returned to the message originator
AND Field 1 (Report to Observer) of Set ROB specified “CANTCO” (Cannot Comply)
AND Field 2 (Reason Code) shall be specified “12” (Non specific)
ENDIF

13.6.3 IF the target specified by Set TNO (Target Number) is NOT in an active status
THEN The message will be rejected
AND An FM.FMC returned to the message originator
AND Field 1 (Report to Observer) of Set ROB specified “CANTCO” (Cannot Comply)
AND Field 2 (Reason Code) shall be specified “2” (Fire mission not active)
ENDIF

13.6.4 IF the fire mission specified by Set TNO (Target Number) has been executed by an MLRS unit
THEN Only Sets TNO (Target Number) and EOM (End of Mission) shall be specified
AND Set SUR (Surveillance) may be specified
ENDIF

13.6.5 IF Set TNO (Target Number) is specified
AND Set MOC (Method of Control) is specified
AND No other sets are specified
THEN Repeat Fire for Effect is required
AND The same weight and type of fire shall be directed at the previously ordered target location
ENDIF

13.6.6 IF the iterations of Set MUE (Munitions in Effect) imply a mixed load on a MLRS launcher
THEN The mission shall be rejected
ENDIF

13.6.7 IF Set TRJ (Trajectory Type) is specified
AND The mission is to employ MLRS munitions
THEN Set TRJ shall be processed according to national procedures
ENDIF

13.6.8 IF Set TRJ (Trajectory Type) is specified
THEN The receiving system may ignore the data specified
AND Determine the trajectory according to national procedures
ENDIF

13.6.9 IF Set MUE (Munitions in Effect) is specified
THEN Only one iteration shall be specified
ENDIF

13.6.10 IF the mission is to be ended
AND No further fire on the target is requested
THEN Set MOC (Method of Control) shall NOT be specified
ELSE Set MOC shall be specified
ENDIF

13.6.11 IF Field 1 (Method of Control) of Set MOC (Method of Control) is specified “RWR” (Restricted When Ready)
THEN Field 2 (Date-Time) of Set MOC shall specify the earliest permitted firing time in the execution of the specified method of fire
ENDIF

13.6.12 IF Set MOC (Method of Control) is specified
AND The mission request specified by the message is rejected by the receiving nation
THEN The receiving nation shall NOT close the mission
ENDIF

13.6.13 IF Field 1 (End of Mission Indicator) of Set EOM (End of Mission) is specified “Y” (Yes)
AND Set MOC (Method of Control) is NOT specified
AND The target specified by Set TNO (Target Number) is currently subject to one or more Check Firing/Cease Loading orders
THEN The mission shall be closed without any further rounds being fired on the target
ENDIF

13.6.14 IF Field 1 (Method of Control) of Set MOC (Method of Control) is specified “RWR” (Restricted When Ready)
AND Set EFR (Effects Required) was specified in the initial FM.CFF

THEN The message will be rejected
AND An FM.FMC returned to the message originator
AND Field 1 (Report to Observer) of Set ROB specified “CANTCO” (Cannot Comply)
AND Field 2 (Reason Code) shall be specified “12” (Non specific)
ENDIF

13.6.15 IF Set FIRINT (Firing Interval) is specified
AND The mission is to employ MLRS munitions
THEN Set FIRINT shall be processed according to national procedures
ENDIF

14. MET.CM

14.1 General

14.1.1 This message will be used to transmit computer meteorological data.

14.2 Message Content

Ser	SET ID	Set OCC	FLD OCC	Fld No	Field Title	Field Length
A	MSGID	M			MESSAGE IDENTIFICATION	
			M	1	Message Type	6X
			M	2	Originator	13X
B	MSTA	M			MET STATION DATA	
			M	1	Global Octant	1N
			M	2	MET Station Location	6AN
			M	3	MET Validity	6N
			M	4	MET Station Height/Pressure	6N
C	DCM	M			MET DATA	
			M	1	MET.CM Zone Code	2N
			M	2	MET Wind Direction/Speed	6N
			M	3	MET Air Temperature/Pressure	8N

14.3 Set and Field Definitions

14.3.1 Set Identifier: MSGID (M) (Message Identification)

Field 1 - Message Type (M). Six (6) characters used to specify the message type. Legal entry:

MET.CM.

Field 2 - Originator (M). Thirteen (13) characters used to specify the logical name of the message originator. Legal entries:

Digits: 0 to 9
Letters: A to Z
Special Character : Period (.)
Blank character (Hex 20).
The period is only valid in the second, fourth, sixth, and tenth character positions, and shall always be present in those character positions.

14.3.2 Set Identifier: MSTA (M) (MET Station Data)

Field 1 - Global Octant (M). One (1) digit used to specify the global octant of the MET station location. See Table 27. Legal Entries for Global Octants

Field 2 - MET Station Location (M). Six (6) digits used to specify the MET station location in geographic coordinates, or six (6) characters used to specify a coded location. For geographic coordinates, the first three (3) digits shall be the latitude to the nearest tenth of a degree, and the last three (3) digits, the longitude to the nearest tenth of a degree. Latitude and longitude are expressed

in tens, units, and tenths; for longitude over 100 degrees, the hundredth digit shall be assumed by the computer. Legal entries:

Latitude: 000 to 900
Longitude: 000 to 999
Coded Locations
Digits: 0 to 9
Letters: A to Z.

Field 3 - MET Validity (M). Six (6) digits used to specify the ZULU date-time of the meteorological observation and duration of validity. The first two (2) digits represent the day of the month, the next three (3) digits, the hour to the nearest tenth of an hour, and the final digit, the period of validity in hours. Legal entries:

Day: 01 to 31
Hour: 000 to 239
Period of Validity
0 to 9 (A 9 represents 12 hours of validity. A zero (0) means that the MET.CM message is valid until a later MET.CM message is received).

Field 4 - MET Station Height/Pressure (M). Six (6) digits used to specify the altitude of the MET Datum Plain (MDP) and the surface atmospheric pressure. The first three (3) digits represent the altitude of the MDP in tens of meters above mean sea level, and the final three (3) digits, surface pressure at the MDP in millibars. Legal entries:

MDP Altitude 000 to 999
Surface Pressure: 000 to 999 (000 to 100 represents 1,000 to 1,100).

14.3.3 Set Identifier: DCM (M) (MET Data)

Field 1 - MET.CM Zone Code (M). Two (2) digits used to specify the altitude band of the appropriate atmospheric zone above the MDP to which the reported meteorological information relates. See STANAG 4082 for the complete definition. Legal entries:

00 to 31.

Field 2 - MET Wind Direction/Speed (M). Six (6) digits used to specify the wind direction and wind speed. The first three (3) digits represent the true direction from which the wind is flowing in tens of mils, and the final three (3) digits, the wind speed in knots. Legal entries:

Wind Direction: 000 to 640
Wind Speed: 000 to 300.

Field 3 - MET Air Temperature/Pressure (M). Eight (8) digits used to specify the air temperature and pressure. The first four (4) digits represent the air temperature to the nearest tenth of a degree Kelvin, and the final four (4) digits represent the air pressure to the nearest millibar. Legal entries:

Air Temperature: 0000 to 5000
Air Pressure: 0000 to 1100.

NOTE: Fields 1, 2, and 3 may be repeated as a group up to thirty-two (32) times, initial plus thirty-one (31) in order to specify up to 32 standard altitude zones.

14.4 Message Processing

14.4.1 Cases

None.

14.4.2 Conditions.

IF the first three (3) positions (Wind Direction) of Field 2 (MET Wind Direction/Speed) of Set DCM (MET Data) are specified “000”

THEN The last three (3) positions (Wind Speed) of Field 2 shall be specified “000”

ENDIF

IF the last three (3) positions (Wind Speed) of Field 2 (MET Wind Direction/Speed) of Set DCM (MET Data) are specified “000

THEN The first three (3) positions (Wind Direction) of Field 2 shall be specified “000”

ENDIF

14.5 Expected Response

14.5.1 No response is expected by the MET.CM originator.

14.6 Special Considerations

14.6.1 IF Field 1 (Global Octant) of Set MSTA (MET Station Data) is specified "4" (Not Used)
THEN The message will be rejected
ENDIF

14.6.2 IF Field 1 (Global Octant) of Set MSTA (MET Station Data) is specified “0” through “8” (except “4”)
THEN Field 2 (MET Station Location) shall be specified as the Latitude and Longitude o f the MET Station
ENDIF

14.6.3 IF Field 1 (Global Octant) of Set MSTA (MET Station Data) is specified “9” (Coded)
THEN Field 2 (MET Station Location) shall be specified as a coded location
ENDIF

15. MET.RFM

15.1 General

15.1.1 This message will be used to request meteorological support.

15.2 Message Content

Ser	SET ID	Set OCC	FLD OCC	Fld No	Field Title	Field Length
A	MSGID	M			MESSAGE IDENTIFICATION	
			M	1	Message Type	7X
			M	2	Originator	13X
B	GPA	M			MET TYPE	
			M	1	MET Type/Global Octant	6AN
C	GPB	M			MET AREA	
			M	1	Area of Interest	6AN
D	GPC	M			MET TIMING	
			M	1	Support Timing	6N
E	GPD	M			MET LINE NUMBERS	
			M	1	MET Data Limits	6N

15.3 Set and Field Definitions.

15.3.1 Set Identifier: MSGID (M) (Message Identification)

Field 1 - Message Type (M). Seven (7) characters used to specify the message type. Legal entry:

MET.RFM.

Field 2 - Originator (M). Thirteen (13) characters used to specify the logical name of the message originator. Legal entries:

Digits: 0 to 9
Letters: A to Z
Special Character : Period (.)
Blank character (Hex 20).

The period is only valid in the second, fourth, sixth, and tenth character positions, and shall always be present in those character positions.

15.3.2 Set Identifier: GPA (M) (MET Type)

Field 1 - MET Type/Global Octant (M). Six (6) characters used to specify the meteorological support requested. The first four (4) characters are the letters "METR" (MET Request) followed by one (1) digit used to specify the type of MET data requested, and the last, one (1) digit used to specify the global octant in which the requesting unit is located. Legal entries:

Letters: "METR"
Digits: 5 (Basic Wind Report, NBC.BWR)
6 (Target Acquisition, MET.TA)

7 (Chemical Downwind Report, NBC.CDR)
8 (Effective Downwind Report, NBC.EDR)
9 (Computer, MET.CM)
Global Octant, See Legal Entries Table 27. Legal Entries for Global Octants for the codes.

15.3.3 Set Identifier: GPB (M) (MET Area)

Field 1 - Area of Interest (M). Six (6) digits used to specify the center of the area of interest in geographic coordinates, or six (6) characters used to specify the coded location. For geographic coordinates, the first three (3) digits shall be the latitude to the nearest tenth of a degree, and the last three (3) digits, the longitude to the nearest tenth of a degree. Latitude and longitude are expressed in tens, units, and tenths of degrees. Legal entries:

Latitude: 000 to 900
Longitude: 000 to 999
Coded Location
Digits: 0 to 9
Letters: A to Z.

15.3.4 Set Identifier: GPC (M) (Met Timing)

Field 1 - Support Timing (M). Six (6) digits used to specify the ZULU date-time that the first and last message is to be delivered. The first two (2) digits represent the day of the month, the next two (2) digits, the starting hour for the first message, and the last two (2) digits the final hour for the last message. Legal entries:

Day: 01 to 31
Start Hour: 00 to 23
Finish Hour: 00 to 23.

15.3.5 Set Identifier: GPD (M) (MET Line Numbers)

Field 1 - MET Data Limits (M). Six (6) digits used to specify the lowest and highest altitude band of the appropriate atmospheric zone, the number of days that MET support is required, and the time interval between messages. The first two (2) digits represent the lowest altitude band, the next two (2) digits, the highest altitude band, the fifth digit is the number of days (0 to 9) to be added to the day of the month used to specify the last day that MET support is required, and the sixth digit, the time interval between messages, in hours. Legal entries:
Lowest/Highest Altitude Band: 00 to 31
Last Day of Support: 0 to 9 (Added to the day specified in Set GPC)
Hourly Intervals Between Messages: 1 to 9 (An entry of 9 is a 12 hour interval).

15.4 Message Processing

15.4.1 Cases

None.

15.4.2 Conditions

None.

15.5 Expected Response

15.5.1 Meteorological messages of the type requested are expected by the message originator.

15.6 Special Considerations

15.6.1 The highest altitude band specified in Set GPD shall NOT exceed the highest altitude band of the type of meteorological message requested, or the message will be rejected.

15.6.2 IF the last position of Field 1 (MET Type/Global Octant) of Set GPA (MET Type) is specified "4" (NOT Used)
THEN The message will be rejected
ENDIF

15.6.3 IF the last position of Field 1 (MET Type/Global Octant) of Set GPA (MET Type) is specified “0” through “8” (except “4”)
THEN Field 1 (Area of Interest) of Set GPB (MET Area) shall be specified as the Latitude and Longitude of the MET Station
ENDIF

15.6.4 IF the last position of Field 1 (MET Type/Global Octant) of Set GPA (MET Type) is specified “9”
THEN Field 1 (Area of Interest) of Set GPB (MET Area) shall be specified as a coded location
ENDIF

15.6.5 IF the first 2 digits (lowest altitude band) of Field 1 (MET Data Limits) of Set GPD (MET Line Numbers) are not specified 00
THEN The message will be rejected
ENDIF

16. MET.TA

16.1 General

16.1.1 This message will be used to transmit meteorological data for target acquisition purposes.

16.2 Message Content

Ser	SET ID	Set OCC	Fld OCC	Fld No	Field Title	Field Length
A	MSGID	M			MESSAGE IDENTIFICATION	
			M	1	Message Type	6X
			M	2	Originator	13X
B	MSTA	M			MET STATION DATA	
			M	1	Global Octant	1N
			M	2	MET Station Location	6AN
			M	3	MET Validity	6N
			M	4	MET Station Height/Pressure	6N
C	CBMRI	M			CLOUD DATA	
			M	1	Cloud Base Height	3N
			O	2	Mean Refractive Index	3N
D	DTA	M			MET DATA	
			M	1	MET.TA Zone Code	2N
			M	2	MET Wind Direction/Speed	6N
			M	3	MET Air Temperature/Humidity	6N

16.3 Set and Field Definition

16.3.1 Set Identifier: MSGID (M) (Message Identification)

Field 1 - Message Type (M). Six (6) characters used to specify the message type. Legal entry:

MET.TA.

Field 2 - Originator (M). Thirteen (13) characters used to specify the logical name of the message originator. Legal entries:

Digits: 0 to 9
Letters: A to Z
Special Character : Period (.)
Blank character (Hex 20).

The period is only valid in the second, fourth, sixth, and tenth character positions, and shall always be present in those character positions.

16.3.2 Set Identifier: MSTA (M) (MET Station Data)

Field 1 - Global Octant (M). One (1) digit used to specify the global octant of the MET station location. See Table 27. Legal Entries for Global Octants.

Field 2 - MET Station Location (M). Six (6) digits used to specify the MET station location in geographic coordinates, or six (6) characters used to specify a coded location. For geographic coordinates, the first three (3) digits shall be the latitude to the nearest tenth of a degree, and the last three (3) digits, the longitude to the nearest tenth of a degree. Latitude and longitude are expressed in tens, units, and tenths; for longitudes over 100 degrees, the hundredth digit shall be assumed by the computer. Legal entries:

Latitude: 000 to 900
Longitude: 000 to 999
Coded Location
Digits: 0 to 9
Letters: A to Z.

Field 3 - MET Validity (M). Six (6) digits used to specify the ZULU date-time of the meteorological observation and the duration of validity. The first two (2) digits represent the ZULU day of the month, the next three (3) digits, the ZULU hour to the nearest tenth, and the final digit, the period of validity in hours. Legal entries:

Day: 01 to 31
Hour: 000 to 239
Period of Validity
0 to 9 (An entry of 9 represents 12 hours of validity). A zero (0) means that the MET.TA message is valid until a later MET.TA message is received.

Field 4 - MET Station Height/Pressure (M). Six (6) digits used to specify the altitude of the MET Datum Plain (MDP) and the surface atmospheric pressure. The first three (3) digits represent the altitude of the MDP in tens of meters above sea level, and the final three (3) digits, the surface atmospheric pressure at the MDP in millibars. Legal entries:

MDP Altitude: 000 to 999
Surface Pressure: 000 to 999 (000 to 100 represents 1,000 to 1,100).

16.3.3. Set Identifier: CBMRI (M) (Cloud Data)

Field 1 - Cloud Base Height (M). Three (3) digits used to specify the base of the lowest cloud in tens of meters above the MDP altitude. See Table 28. Legal Entries for MET.TA Cloud Base Height.

Field 2 - Mean Refractive Index (O). Three (3) digits used to specify the mean refractive index at the surface. Legal entries:

000 to 999.

16.3.4 Set Identifier: DTA (M) (MET Data)

Field 1 - MET.TA Zone Code (M). Two (2) digits used to specify the altitude band of the appropriate atmospheric zone above the MDP to which the reported meteorological information relates. See STANAG 4140 for the complete definition. Legal entries:

00 to 17.

Field 2 - MET Wind Direction/Speed (M). Six (6) digits used to specify the wind direction and wind speed. The first three (3) digits represent the true direction from which the wind is flowing in tens of mils, and the final three (3) digits represent the wind speed in knots. Legal

entries:

Wind Direction: 000 to 640
Wind Speed: 000 to 300.

Field 3 - MET Air Temperature/Humidity (M). Six (6) digits used to specify the air temperature and relative humidity. The first four (4) digits represent the air temperature to the nearest tenth of a degree Kelvin, and the final two (2) digits represent the relative humidity to the nearest one percent. Legal entries:

Air Temperature: 0000 to 5000
Relative Humidity: 00 to 99
(An entry of 00 indicates 100%).

NOTE: Field 1, 2, and 3 may be repeated as a group up to 18 times so all of the standard altitude zones can be reported.

16.4 Message Processing

16.4.1 Cases

None.

16.4.2 Conditions

IF the first three (3) positions (Wind Direction) of Field 2 (MET Wind Direction/Speed) of Set DTA (MET Data are specified “000”

THEN The last three (3) positions (Wind Speed) of Field 2 shall be specified “000”

ENDIF

IF the last three (3) positions (Wind Speed) of Field 2 (MET Wind Direction/Speed) of Set DTA (MET Data are specified “000”

THEN The first three (3) positions (Wind Direction) of Field 2 shall be specified “000”

ENDIF

16.5 Expected Response

16.5.1 No response is expected by the MET.TA message originator.

16.6 Special Considerations

IF Field 1 (Global Octant) of Set MSTA (MET Station Data) is specified "4" (NOT Used)

THEN The message will be rejected

ENDIF

IF Field 1 (Global Octant) of Set MSTA (MET Station Data) is specified “0” through “8” (except “4”)

THEN Field 2 (MET Station Location) shall be specified as the Latitude and Longitude o f the MET Station

ENDIF

IF Field 1 (Global Octant) of Set MSTA (MET Station Data) is specified “9” (Coded)
THEN Field 2 (MET Station Location) shall be specified as a coded location
ENDIF

17. MOD ATTACK & MOD XCLUDE

It has been recommended that these messages are deleted.

18. NNFP.COMFP

18.1 General

18.1.1 This message will be used to establish a fire plan, or to establish or cancel H-Hour.

18.2 Message Content

Ser	SET ID	Set OCC	FLD OCC	Fld No	Field Title	Field Length
A	MSGID	M			MESSAGE IDENTIFICATION	
			M	1	Message Type	10X
			M	2	Originator	13X
B	OPT	M			OPTION	
			M	1	Primary Option	3A
			C[19]	2	Secondary Option	3A
C	FPN	M			FIRE PLAN NAME	
			M	1	Fire Plan Name	1-6AN
D	GRID	O			CENTER OF TARGET AREA	
			M	1	UTM Easting	6N
			M	2	UTM Northing	1-8N
			O	3	Altitude	1-5NS
E	GZE	C			GRID ZONE	
			M	1	Grid zone	1-3NS
F	HHOUR	O			H-HOUR	
			M	1	DTG	4N[20]
G	WPN	O			FIRE UNIT WEAPONS	
			M	1	Number of Weapons	1-2N
			M	2	Weapon Type	4-6X[21]
			O	3	Weapon Model Number	2-6AN
H	PRJ	O			PROJECTILES	
			M	1	Projectile Type	3X
			M	2	Number of Projectiles	1-4N
I	FPTIME	O			ESTIMATED FIRE PLAN TIME	
			M	1	Estimated DTG of Start	6N[22]
			M	2	Estimated DTG of Stop	6N

18.3 Set and Field Definitions.

18.3.1 Set Identifier: MSGID (M) (Message Identification)

Field 1 - Message Type (M). Ten (10) characters used to specify the message type. Legal entry:

NNFP.COMFP.

[19] FIELD 2 IN SET B (OPT) IS PROHIBITED IF FIELD 1 IN SET A (MSGID) EQUALS "NNFP.COMFP".
[20] H Hr is an optional field and should be sent a few hours prior to commencement of the Fire Plan.
[21] For example MORTAR
[22] The estimated time may be some days in the future, therefore the day must be specified.

Field 2 - Originator (M). Thirteen (13) characters used to specify the logical name of the message originator. Legal entries:

Digits: 0 to 9
Letters: A to Z
Special Character : Period (.)
Blank character (Hex 20).

The period is only valid in the second, fourth, sixth, and tenth character positions, and shall always be present in those character positions.

18.3.2 Set Identifier: OPT (M) (Option)

Field 1 - Primary Option (M). Three (3) letters used to specify the primary option to be taken. Legal entries:

XMT - Transmit
CAN - Cancel.

Field 2 - Secondary Option (C). This field shall NOT be specified in this message.

18.3.3 Set Identifier: FPN (M) (Fire Plan Name)

Field 1 - Fire Plan Name (M). One (1) to six (6) characters used to specify the name of the fire plan to which the information relates. Legal entries:

Digits: 0 to 9
Letters: A to Z.

18.3.4 Set Identifier: GRID (O) (Center of Target Area)

Field 1 - UTM Easting (M). Six (6) digits used to specify the higher order Easting of the center of target area in meters. Legal entries:

000000 to 999999.

Field 2 - UTM Northing (M). One (1) to eight (8) digits used to specify the higher order Northing of the center of target area in meters. Legal entries:

Northern Hemisphere: 0 to 10000000
Southern Hemisphere: 0 to 11000000.

Field 3 - Altitude (O). One (1) to five (5) characters used to specify the altitude of the location in meters. Altitudes below sea level shall be preceded by a minus (-) sign. Plus (+) is understood if a minus (-) is not specified. Legal entries:

-400 to 99999.

18.3.5 Set Identifier: GZE (C) (Grid Zone)

Field 1 - Grid Zone (M). Three (3) characters used to specify the earth hemisphere and grid zone designator. One (1) or two (2) digits used to specify the grid zone at the location, proceeded by one (1) character used to specify the earth hemisphere. Grid zones in the southern hemisphere shall be preceded by a minus (-) sign. Plus (+) is understood if a minus (-) is not specified but may be entered. Legal entries:

Northern: 1 to 60

Southern: -1 to -60.

18.3.6 Set Identifier: HHOUR (O) (H-Hour)

Field 1 - DTG (M). Four (4) digits used to specify the ZULU time of H-Hour for the fire plan. The first two (2) digits represent the hour of the day, and the final two (2) digits, the minutes of the hour. Legal entries:

Hour: 00 to 23
Minutes: 00 to 59.

18.3.7 Set Identifier: WPN (O) (Fire Unit Weapons)

Field 1 - Number of Weapons (M). One (1) or two (2) digits used to specify estimation of the number of weapons (gun platforms or launchers) to be used by the supporting nation in the fire plan. Legal entries:

1 to 99.

Field 2 - Weapon Type (M). Four (4) to six (6) characters used to specify the weapon type. See Legal Entries Table 19. Legal Entries for Weapons and Models for the codes.
Field h - Weapon Model Number (O). Two (2) to six (6) characters used to specify the weapon model number. See Legal Entries Table 19. Legal Entries for Weapons and Models for the codes.

NOTE: Fields 1, 2 and 3 may be repeated as a group up to three (3) times, initial plus two (2).

18.3.8 Set Identifier: PRJ (O) (Projectiles)

Field 1 - Projectile Type (M). Three (3) characters used to specify the projectile type. See Legal Entries Table 22. Legal Entries for Fire Support Ammunition for the codes.
Field 2 - Number of Projectiles (M). One (1) to four (4) digits used to specify the estimation of the quantity of projectiles to be used for the fire plan for the type specified in Field 1. Legal entries:

1 to 9999.

NOTE: Fields 1 and 2 may be repeated as a group up to six (6) times, initial plus five (5).

18.3.9 Set Identifier: FPTIME (O) (Estimated Fire Plan Time)

Field 1 - Estimated DTG of Start (M). Six (6) digits used to specify the estimated ZULU date-time that the Fire Plan will begin. The first two (2) digits represent the day of the month, the next two (2) digits, the hour of the day, and the final two (2) digits, the minutes of the hour. Legal entries:

Day: 01 to 31
Hour: 00 to 23
Minutes: 00 to 59.

Field 2 - Estimated DTG of Stop (M). Six (6) digits used to specify the estimated ZULU date-time that the Fire Plan will end. The first two (2) digits represent the day of the month, the next two (2) digits, the hour of the day, and the final two (2) digits, the minutes of the hour. Legal entries:

Day: 01 to 31
Hour: 00 to 23
Minutes: 00 to 59.

18.4 Message Processing

18.4.1 Cases

CASE: Establish a Fire Plan Warning Order
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified "XMT" (Transmit)
AND Set FPN
END CASE

CASE: Establish or Change H-Hour
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified "XMT" (Transmit)
AND Set FPN
AND Set HHOUR
AND NOT Set FPTIME
AND NOT Set GRID
AND NOT Set GZE
AND NOT Set WPN
AND NOT Set PRJ
END CASE

CASE: Cancel H-Hour
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified "CAN" (Cancel)
AND Set FPN
AND NOT Set HHOUR
AND NOT Set GRID
AND NOT Set GZE
AND NOT Set WPN
AND NOT Set PRJ
AND NOT Set FPTIME
END CASE

18.5 Conditions

18.5.1 IF Set GRID (Center of Target Area) is specified
THEN Set GZE (Grid Zone) shall be specified
ENDIF

18.6 Expected Response

18.6.1 A response message(s) shall be generated and transmitted to the NNFP.COMFP originator in accordance with the message flow diagram for Figure 15. Fire Plan Processing**.**

18.7 Special Considerations

18.7.1 IF Field 1 (Primary Option) of Set OPT (Option) is specified "CAN" (Cancel)
AND Set FPN (Fire Plan Name) is specified
AND No other sets are specified
THEN H-Hour shall be canceled
AND Firing shall NOT begin on the Fire Plan
AND The Fire Plan shall NOT be canceled
ENDIF

18.7.2 IF Field 1 (Primary Option) of Set OPT (Option) is specified "CAN" (Cancel)
AND The fire plan specified by Set FPN does not exist
THEN The message will be rejected
ENDIF

18.7.3 IF FPTIME (Estimated Fire Plan Time) is specified
THEN The difference between Field 1 (Estimated DTG of Start) of Set FPTIME and Field 2 (Estimated DTG of Stop) of Set FPTIME shall NOT exceed 240 minutes
ENDIF

19. NNFP.FP

19.1 General

19.1.1 This message will be used to transmit fire plan targets and/or orders in a specified target list, to delete fire plan targets and/or orders from a specified target list in a fire plan or to delete an entire plan.

19.2 Message Content

Ser	SET ID	SET OCC	FLD OCC	Fld No	Field Title	Field Length
A	MSGID	M			MESSAGE IDENTIFICATION	
			M	1	Message Type	7X
			M	2	Originator	13X
B	OPT	M			OPTION	
			M	1	Primary Option	3A
			O	2	Secondary Option	3A
C	FPN	M			FIRE PLAN NAME	
			M	1	Fire Plan Name	1-6AN
D	TNO	C			TARGET NUMBER	
			M	1	Target Number	6AN
E	TGTINST	O			TARGET INSTANCE	
			M	1	Target Instance	1-2N
F	GRID	O			TARGET LOCATION	
			M	1	UTM Easting	6N
			M	2	UTM Northing	1-8N
			M	3	Altitude	1-5NS
G	GZE	C			GRID ZONE	
			M	1	Grid Zone	1-3NS
H	TST	O			TARGET DESCRIPTION	
			M	1	Target Type	3-6A
			M	2	Target Subtype	2-6A
			C	3	Degree of Protection	4-6A
I	STR	O			TARGET STRENGTH	
			M	1	Number of Target Elements	1-4N
J	RVA	O			REPORT VALUE ACCURACY	
			M	1	Report Accuracy	1-3N
K	SIZ	O			TARGET SIZE	
			M	1	Length or radius	1-4N
			O	2	Width	1-4N
			C	3	Attitude	4N
L	RHR	C			H-HOUR TIME	
			M	1	Time Relative to H-Hour	1-4NS
			O	2	Duration of Fire	1-2N
M	PRI	O			TARGET PRIORITY	
			M	1	Target Priority	1N
N	GRP	O			TARGET GROUP	
			M	1	Target Group Name	1-6AN
O	TLD	O			TARGET LIST	
			M	1	Target List Designator	3A

P	UNT	C			FIRE UNIT	
			O	1	Section	1ANB
			O	2	Platoon	1ANB
			M	3	Battery/Company	1ANB
			M	4	Battalion/Regiment	1-3ANB
			M	5	Regiment/Brigade/Division	1-3ANB
Q	TRJ	C			TRAJECTORY	
			M	1	Trajectory Type	3-4A
R	VOLS	C			VOLLEYS	
			M	1	Volleys First Projectile/Fuze	1-2N
			O	2	Volleys Second Projectile/Fuze	1-2N
S	EFR	C			EFFECTS	
			M	1	Effects Required	1-2N
T	SHL	C			PROJECTILES	
			M	1	First Selected Projectile	3A
			O	2	Second Selected Projectile	3A
U	FUZE	C			FUZES	
			M	1	First Selected Fuze	2-4A
			O	2	Second Selected Fuze	2-4A

19.3 Set and Field Definitions

19.3.1 Set Identifier: MSGID (M) (Message Identification)

Field 1 - Message Type (M). Seven (7) characters used to specify the message type. Legal entry:

NNFP.FP.

Field 2 - Originator (M). Thirteen (13) characters used to specify the logical name of the message originator. Legal entries:

Digits: 0 to 9
Letters: A to Z
Special Character : Period (.)
Blank character (Hex 20).

The period is only valid in the second, fourth, sixth, and tenth character positions, and shall always be present in those character positions.

19.3.2 Set Identifier: OPT (M) (Option)

Field 1 - Primary Option (M). Three (3) letters used to specify the primary option to be taken. Legal entries:

CAN - Cancel
XMT - Transmit.

Field 2 - Secondary Option (O). Three (3) letters used to specify the secondary option to be taken. Legal entry:

LST - Last Target

19.3.3 Set Identifier: FPN (M) (Fire Plan Name)

Field 1 - Fire Plan Name (M). One (1) to six (6) characters used to specify the name of the fire plan to which the information relates. Legal entries:

Digits: 0 to 9
Letters: A to Z.

19.3.4 Set Identifier: TNO (C) (Target Number)

Field 1 - Target Number (M). Six (6) characters used to specify the target number. The first two (2) characters shall be letters followed by four (4) digits. Legal entries:

Letters: AA to ZZ
Digits: 0001 to 9999.

19.3.5 Set Identifier: TGINST (O) (Target Instance)

Field 1 - Target Instance (M). One (1) or two (2) digits used to specify a unique numeric value to identify each instance of a specified target number, which is repeated in the plan. Legal entries:

1 to 99

19.3.6 Set Identifier: GRID (O) (Target Location)

Field 1 - UTM Easting (M). Six (6) digits used to specify the higher order Easting of the target location in meters. Legal entries:

0000000 to 999999.

Field 2 - UTM Northing (M). One (1) to eight (8) digits used to specify the higher order Northing of the target location in meters. Legal entries:

Northern Hemisphere: 0 to 10000000
Southern Hemisphere: 0 to 11000000.

Field 3 - Altitude (M). One (1) to five (5) characters used to specify the altitude of the location in meters. Altitudes below sea level shall be preceded by a minus (-) sign. Plus (+) is understood if a minus (-) is not specified. Legal entries:

-400 to 99999.

19.3.7 Set Identifier: GZE (C) (Grid Zone)

Field 1 - Grid Zone (M). Three (3) characters used to specify the earth hemisphere and grid zone designator. One (1) or two (2) digits used to specify the grid zone at the location, proceeded by one (1) character used to specify the earth hemisphere. Grid zones in the southern hemisphere shall be preceded by a minus (-) sign. Plus (+) is understood if a minus (-) is not specified but may be entered. Legal entries:

Northern: 1 to 60
Southern: -1 to -60.

19.3.8 Set Identifier: TST (O) (Target Description)

Field 1 - Target Type (M). Three (3) to six (6) letters used to specify the target type. See

Table 17. Legal Entries for Target Type/Subtype for the codes.

Field 2 - Target Subtype (M). Two (2) to six (6) letters used to specify the target subtype. See **Table 17. Legal Entries for Target Type/Subtype**

Field 3 - Degree of Protection (C). Four (4) to six (6) letters used to specify the general degree of personnel protection. See Table2 Legal Entries for Degree of Protection

19.3.9 Set Identifier: STR (O) (Target Strength)

Field 1 - Number of Target Elements (M). One (1) to four (4) digits used to specify the number of target elements. Legal entries:

1 to 9999.

19.3.10 Set Identifier: RVA (O) (Report Value Accuracy)

Field 1 - Report Accuracy (M). One (1) to three (3) digits used to specify the accuracy of the target location in meters. Legal entries:

1 to 999.

19.3.11 Set Identifier: SIZ (O) (Target Size)

Field 1 - Length or Radius (M). One (1) to four (4) digits used to specify either the length (rectangular) or the radius (circular) in meters. Legal entries:

Field 2 - Width (O). One (1) to four (4) digits used to specify the width in meters. Legal entries:

1 to 9999.

Field 4- Attitude (C). Four (4) digits used to specify the azimuth of the longest axis in mils. Legal entries:

0000 to 6399.

19.3.12 Set Identifier: RHR (C) (H-Hour Time)

Field 1 - Time Relative to H-Hour (M). One (1) to four (4) characters used to specify scheduled Time on Target (TOT) relative to H-Hour. One (1) to three (3) digits shall specify the minutes after H-Hour (H+); or one (1) to three (3) digits preceded by a minus (-) sign shall specify the minutes prior to H-Hour (H-). An entry of a single zero (0) shall be H-Hour. The minutes after H-Hour (H+) is understood if a minus (-) is not specified. Legal entries:

-240 to 240

Field 2 - Duration of Fire (O). One (1) or two (2) digits used to specify the number of minutes the target is to be engaged. Legal entries:

1 to 99.

19.3.13 Set Identifier: PRI (O) (Target Priority)

Field 1 - Target Priority (M). One (1) digit used to specify the priority of the target in the Fire Plan List. Legal entries:

1 to 4 (where 1 is the highest and 4 is the lowest).

19.3.14 Set Identifier: GRP (O) (Target Group)

Field 1 - Target Group Name (M). One (1) to six (6) characters used to specify the name of the group to which the target is assigned. Legal entries:

Digits: 0 to 9
Letters: A to Z.

19.3.15 Set Identifier: TLD (O) (Target List)

Field 1 - Target List Designator (M). Three (3) letters used to specify the target list to which the target is assigned. Legal entries:

FPL - Fire Plan Target List
TIS - Target in the Schedule of Fires

19.3.16 Set Identifier: UNT (C) (Fire Unit).

Field1 - Section (O). One (1) character used to specify the section identification. Legal entries:

Digits: 0 to 9
Letters: A to Z
Space (Hex 20).

Field 2 - Platoon (O). One (1) character used to specify the platoon identification. Legal entries:

Digits: 0 to 9
Letters: A to Z
Space (Hex 20).

Field 3 - Battery/Company (M). One (1) character used to specify the battery/company identification. Legal entries:

Digits: 0 to 9
Letters: A to Z.

Field 4 - Battalion/Regiment (M). One (1) to three (3) characters used to specify the battalion/regiment identification.

Digits: 0 to 9
Letters: to Z
Space (Hex 20).

Field 5 - Regiment/Brigade/Division (M). One (1) to three (3) characters used to specify the regiment/brigade/division identification. Legal entries:

Digits: 0 to 9
Letters: A to Z
Space (Hex 20).

NOTE: Fields may be repeated as a group up to five (5) times, initial plus four (4).

19.3.17 Set Identifier: TRJ (C) (Trajectory

Field 1 - Trajectory Type (M). Three (3) or four (4) letters used to specify the type of

trajectory. Legal entries:

LOW - (Low Angle)

HIGH - (High Angle).

NOTE: Field 1 may be repeated as a group up to five (5) times, initial plus four (4).

19.3.18 Set Identifier: VOLS (C) (Volleys)

Field 1 - Volleys First Projectile/Fuze (M). One (1) or two (2) digits used to specify the initial volleys for each fire unit assigned to the target. Legal entries:

1 to 99.

Field 2 - Volleys Second Projectile/Fuze (O). One (1) or two (2) digits used to specify the number of subsequent volleys to be fired by each fire unit assigned to the target. Legal entries:

1 to 99.

NOTE: Fields 1 and 2 may be repeated as a group up to five (5) times, initial plus four (4).

19.3.19 Set Identifier: EFR (C) (Effects).

Field 1 - Effects Required (M). One (1) or two (2) digits used to specify the percent of damage required on the target per fire unit. Legal entries:

1 to 30.

19.3.20 Set Identifier: SHL (C) (Projectiles)

Field 1 - First Selected Projectile (M). Three (3) letters used to specify the first selected projectile. See **Table 22. Legal Entries for Fire Support Ammunition** for the codes.

Field 2 - Second Selected Projectile (O). Three (3) letters used to specify the projectile type to be fired in subsequent volleys. See **Table 22. Legal Entries for Fire Support Ammunition** for the codes.

NOTE: Fields 1 and 2 may be repeated as a group up to five (5) times, initial plus four (4).

19.3.21 Set Identifier: FUZE (C) (Fuzes)

Field 1 - First Selected Fuze (M). Two (2) to four (4) letters used to specify the first selected fuze. See **Table 22. Legal Entries for Fire Support Ammunition** for the codes.

Field 2 - Second Selected Fuze (O). Two (2) to four (4) letters used to specify the fuze type to be fired in subsequent volleys See **Table 22. Legal Entries for Fire Support Ammunition** for the codes.

NOTE: Fields 1 and 2 may be repeated as a group up to five (5) times, initial plus four (4).

19.4 Message Processing

19.4.1 Cases

CASE: Transmit a Candidate Target for a Fire Plan Target List or Transmit a Target in a Fire Plan Target List

THIS CASE REQUIRES

Field 1 (Primary Option) of Set OPT (Option) specified "XMT" (Transmit)

AND Set FPN

AND Set TNO

AND Set GRID
AND Set GZE
AND Set TLD (Target List) specified "FPL" (Fire Plan Target List)
END CASE

CASE: Transmit a Target In The Schedule Of Fires
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified "XMT" (Transmit)
AND Set FPN
AND Set TNO
AND Set GRID
AND Set GZE
AND Set TST
AND Set SIZ
AND Set RHR
AND Set TLD (Target List) specified "TIS" (Target in the Schedule of Fires)
AND NOT Set PRI
END CASE

CASE: Cancel A Fire Plan
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified "CAN" (Cancel)
AND Set FPN
AND NOT Set TNO
AND NOT Set TGINST
AND NOT Set GRID
AND NOT Set GZE
AND NOT Set TST
AND NOT Set STR
AND NOT Set SIZ
AND NOT Set RHR
AND NOT Set PRI
AND NOT Set GRP
AND NOT Set TLD
AND NOT Set RVA
AND NOT Set UNT
AND NOT Set TRJ
AND NOT Set VOLS
AND NOT Set EFR
AND NOT Set SHL
AND NOT Set FUZE
END CASE

CASE: Cancel a Target from a Fire Plan
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified "CAN" (Cancel)
AND Set FPN
AND Set TNO
AND NOT Set TGINST
AND NOT Set GRID

AND NOT Set GZE
AND NOT Set TST
AND NOT Set STR
AND NOT Set SIZ
AND NOT Set RHR
AND NOT Set PRI
AND NOT Set GRP
AND NOT Set TLD
AND NOT Set RVA
AND NOT Set UNT
AND NOT Set TRJ
AND NOT Set VOLS
AND NOT Set EFR
AND NOT Set SHL
AND NOT Set FUZE
END CASE

CASE: Cancel All Targets In The Fire Plan Target List
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified "CAN" (Cancel)
AND Set FPN
AND Set TLD (Target List) specified "FPL" (Fire Plan Target List)
AND NOT Set TNO
AND NOT Set TGINST
AND NOT Set GRID
AND NOT Set GZE
AND NOT Set TST
AND NOT Set STR
AND NOT Set SIZ
AND NOT Set RHR
AND NOT Set PRI
AND NOT Set GRP
AND NOT Set RVA
AND NOT Set UNT
AND NOT Set TRJ
AND NOT Set VOLS
AND NOT Set EFR
AND NOT Set SHL
AND NOT Set FUZE
END CASE

CASE: Cancel All Targets In The Schedule Of Fires
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified "CAN" (Cancel)
AND Set FPN
AND Set TLD (Target List) specified "TIS" (Target in the Schedule of Fires)
AND NOT Set TNO
AND NOT Set TGINST
AND NOT Set GRID
AND NOT Set GZE

AND NOT Set TST
AND NOT Set STR
AND NOT Set SIZ
AND NOT Set RHR
AND NOT Set PRI
AND NOT Set GRP
AND NOT Set RVA
AND NOT Set UNT
AND NOT Set TRJ
AND NOT Set VOLS
AND NOT Set EFR
AND NOT Set SHL
AND NOT Set FUZE
END CASE

CASE: Cancel All Instances of a Target in a Fire Plan List
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified "CAN" (Cancel)
AND Set FPN
AND Set TNO
AND Set TLD specified "FPL" (Fire Plan Target List)
AND NOT Set TGINST
AND NOT Set GRID
AND NOT Set GZE
AND NOT Set TST
AND NOT Set STR
AND NOT Set SIZ
AND NOT Set RHR
AND NOT Set PRI
AND NOT Set GRP
AND NOT Set RVA
AND NOT Set UNT
AND NOT Set TRJ
AND NOT Set EFR
AND NOT Set SHL
AND NOT Set FUZE
AND NOT Set VOLS
END CASE

CASE: Cancel All Instances of a Target in a Schedule of Fires
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified "CAN" (Cancel)
AND Set FPN
AND Set TNO
AND Set TLD specified "TIS" (Target in the Schedule of Fires)
AND NOT Set TGINST
AND NOT Set GRID
AND NOT Set GZE
AND NOT Set TST
AND NOT Set STR

AND NOT Set SIZ
AND NOT Set RHR
AND NOT Set PRI
AND NOT Set GRP
AND NOT Set RVA
AND NOT Set UNT
AND NOT Set TRJ
AND NOT Set EFR
AND NOT Set SHL
AND NOT Set FUZE
AND NOT Set VOLS
END CASE

CASE: Cancel An Instance of a Target in a Fire Plan List
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified "CAN" (Cancel)
AND Set FPN
AND Set TNO
AND Set TLD specified "FPL" (Fire Plan Target List)
AND Set TGINST
AND NOT Set GRID
AND NOT Set GZE
AND NOT Set TST
AND NOT Set STR
AND NOT Set SIZ
AND NOT Set RHR
AND NOT Set PRI
AND NOT Set GRP
AND NOT Set RVA
AND NOT Set UNT
AND NOT Set TRJ
AND NOT Set EFR
AND NOT Set SHL
AND NOT Set FUZE
AND NOT Set VOLS
END CASE

Cancel An Instances of a Target in a Schedule of Fires
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified "CAN" (Cancel)
AND Set FPN
AND Set TNO
AND Set TLD specified "TIS" (Target in the Schedule of Fires)
AND Set TGINST
AND NOT Set GRID
AND NOT Set GZE
AND NOT Set TST
AND NOT Set STR
AND NOT Set SIZ
AND NOT Set RHR

AND NOT Set PRI
AND NOT Set GRP
AND NOT Set RVA
AND NOT Set UNT
AND NOT Set TRJ
AND NOT Set EFR
AND NOT Set SHL
AND NOT Set FUZE
AND NOT Set VOLS
END CASE

19.4.2 Conditions

IF Set TGINST (Target Instance) is specified
THEN Set TNO (Target Number) shall be specified
ENDIF

IF Field 1 (Target Type) of Set TST (Target Description) is specified "PERS" (Personnel)
THEN Field 3 (Degree of Protection) shall be specified
ELSE Field 3 shall NOT be specified
ENDIF

IF Field 3 (Attitude) of Set SIZ (Target Size) is specified
THEN Field 2 (Width) shall be specified
ENDIF
IF Field 1 (Primary Option) of Set OPT (Option) is specified "XMT" (Transmit)
AND Set TLD (Target List) is specified "TIS" (Targets In Schedule of Fires)
THEN Set RHR (H-Hour Time) shall be specified
ENDIF

IF Set EFR (Effects) is specified
THEN Set VOLS (Volleys) shall NOT be specified
AND UNT (Fire Unit) shall NOT be specified
ENDIF

IF Set VOLS (Volleys) is specified
THEN Set EFR (Effects) shall NOT be specified
AND UNT (Fire Unit) shall be specified
ENDIF

IF Set GRID (Target Location) is specified
THEN Set GZE (Grid Zone) shall be specified
ENDIF

IF Set UNT (Fire Unit) is specified
THEN Set VOLS (Volleys) shall be specified
AND Set EFR (Effects) shall NOT be specified
ENDIF

IF Set UNT (Fire Unit) is NOT specified

THEN Any of Sets TRJ, VOLS, SHL and FUZE that are specified shall NOT be iterated

ENDIF

IF Set EFR (Effects) is specified

THEN Field 2 (Second Selected Projectile) of Set SHL (Projectiles) shall NOT be specified

AND Field 2 (Second Selected Fuze) of Set FUZE (Fuzes) shall NOT be specified

ENDIF

19.4.3 Defaults

IF Field 1 (Length or Radius) of Set SIZ (Target Size) is specified
AND Set Field 2 (Width) of Set SIZ is specified
AND Set Field 3 (Attitude) of Set SIZ is NOT specified
THEN Field 3 shall default to an attitude of 0000 mils
ENDIF

IF Field 1 (Primary Option) of Set OPT (Option) is specified “XMT” (Transmit)
AND Set TGINST (Target Instance) is NOT specified
THEN Field 1 (Target Instance) of Set TGINST shall default to 1
ENDIF

19.5 Expected Response

19.5.1 No response message is expected by the NNFP.FP originator.

19.6 Special Considerations

19.6.1 Only the targets to be fired by the receiving systems fire units shall be transmitted to that system.

19.6.2 IF Field 1 (Primary Option) of Set OPT (Option) is specified "CAN" (Cancel)
AND Set TNO (Target Number) is specified
AND Set TGINST (Target Instance) is NOT specified
AND Set TLD (Target List) is NOT specified
THEN All occurrences of the target specified by Set TNO shall be deleted from each target list in which they exist
ENDIF

19.6.3 IF Field 1 (Primary Option) of Set OPT (Option) is specified "CAN" (Cancel)
AND Set TNO (Target Number) is specified
AND Set TGINST (Target Instance) is NOT specified
AND Set TLD (Target List) is specified
THEN All occurrences of the target specified by Set TNO shall be deleted from the target list specified by Set TLD
ENDIF

19.6.4 IF Field 1 (Primary Option) of Set OPT (Option) is specified “CAN” (Cancel)

AND Set TNO (Target Number) is specified
AND Set TGINST (Target Instance) is specified
AND Set TLD (Target List) is specified
THEN The single target occurrence specified by both Set TNO and Set TGINST shall be deleted from the target list specified by Set TLD
ENDIF

19.6.5 IF Field 1 (Length or Radius) of Set SIZ (Target Size) is specified
AND Field 2 (Width) of Set SIZ is specified
AND Field 3 (Attitude) of Set SIZ is specified
THEN The target shall be a rectangular target centered at the target location at the attitude specified
ENDIF

19.6.6 IF only Field 1 (Length or Radius) of Set SIZ (Target Size) is specified
THEN The target shall be a circular target centered at the target location
ENDIF

19.6.7 IF Field 1 (Primary Option) of Set OPT (Option) is specified "XMT" (Transmit)
AND The target instance specified by Set TGINST (Target Instance), or the default target instance, for the target specified by Set TNO (Target Number) exists in the target list specified by Set TLD
THEN The existing data record for the specified instance of the specified target in the specified target list shall be deleted
AND A new target record shall be created in the specified target list using the data specified in the message
ENDIF

19.6.8 IF the fire plan specified by Set FPN (Fire Plan Name) does NOT exist
THEN The message will be rejected
ENDIF

19.6.9 IF Field 1 (Primary Option) of Set OPT (Option) is specified “CAN” (Cancel)
AND The target specified by Set TNO (Target Number) does NOT exist in the target list specified by Set TLD (Target List)
THEN The message will be rejected
ENDIF

19.6.10 IF Field 1 (Primary Option) of Set OPT (Option) is specified "CAN" (Cancel)
AND Set FPN (Fire Plan Name) is specified
AND No other sets are specified
THEN All missions in the Fire Plan shall be closed
AND The Fire Unit Data associated with the Fire Plan shall be cancelled
AND The Fire Support Coordination Measures associated with the Fire Plan shall be cancelled
AND The Fire Plan shall be cancelled
ENDIF

19.6.11 IF Set TNO (Target Number) is specified
AND This is the last fire plan target or target order to be sent in the current transmission
THEN Field 2 (Secondary Option) of Set OPT (Option) shall be specified "LST" (Last Target)
ENDIF

19.6.12 IF Field 1 (Primary Option) of Set OPT (Option) is specified “XMT” (Transmit)
AND Set TLD (Target List) is specified
AND The target specified by Set TNO (Target Number) exists two or more times in the target list specified by Set TLD
THEN Set TGINST (Target Instance) shall be specified
ENDIF

19.6.13 IF Set UNT (Fire Unit) is specified
AND Any of Sets TRJ, SHL, VOLS, and FUZE are specified
THEN The number of iterations of each of the Sets TRJ, VOLS, SHL, and FUZE that is specified shall be the same as the number of iterations of Set UNT
AND The N^{th} iteration of each set specified shall be associated with the N^{th} iteration of each of the other sets specified
ENDIF

19.6.14 IF the data specified in received NNFP.FP messages results in a Fire Plan duration greater than 240 minutes
THEN A SYS.RRM shall be returned to the supported nation with Set RMKS (Remarks) specifying that the maximum permitted Fire Plan duration has been exceeded
AND The plan shall not be fired until and unless it is amended so that its duration does not exceed 240 minutes
ENDIF

19.6.15 IF Set TRJ (Trajectory) is specified
AND The mission is to employ MLRS munitions
THEN Set TRJ shall be processed according to national procedures
ENDIF

19.6.16 IF the iterations of Set SHL (Projectiles) imply a mixed load on a MLRS launcher
THEN The mission shall be rejected
ENDIF

19.6.17 IF Field 2 (Duration of Fire) of Set RHR (H-Hour Time) is specified
AND Field 1 (First Selected Projectile) of Set SHL (Projectiles) is specified with a “J” code
OR Field 2 (Second Selected Projectile) is specified with a “J” code
THEN The message will be rejected
ENDIF

19.6.18 IF Field 1 (Primary Option) of Set OPT (Option) is specified “CAN” (Cancel)
AND Set TGINST (Target Instance) is specified

AND The target instance specified by Set TGINST for the target specified by Set TNO (Target Number) does not exist in the target list specified by Set TLD (Target List)
THEN The message will be rejected
ENDIF

19.6.19 IF Field 1 (Primary Option) of Set OPT (Option) is specified “CAN” (Cancel)
AND Set TNO (Target Number) is specified
AND Set TGINST (Target Instance) is specified
AND Set TLD (Target List Designator) is specified “TIS” (Target in the Schedule of Fires)
AND The target specified by Set TNO (Target Number) is currently subject to one or more Check Firing/Cease Loading orders
THEN No further rounds shall be fired in the mission on the specified instance of the target
AND The mission on the specified instance of the target shall be closed
ENDIF

19.6.20 IF Set Field 1 (Primary Option) of Set OPT (Option) is specified “CAN” (Cancel)
AND Set TNO (Target Number) is specified
AND Set TGINST (Target Instance) is NOT specified
AND Set TLD (Target List Designator) is specified “TIS” (Target in the Schedule of Fires)
OR Set TLD is NOT specified
AND The target specified by Set TNO (Target Number) is currently subject to one or more Check Firing/Cease Loading orders
THEN No further rounds shall be fired in any mission(s) on the specified target
AND Every mission on the specified target shall be closed
ENDIF

20. NNFP.RESFU

It has been recommended that this message is deleted

21. SPRT.ACA

21.1 General

21.1.1 This message will be used to establish or delete Airspace Coordination Areas (ACAs).

21.2 Message Content

Ser	SET ID	Set OCC	Fld OCC	Fld No	Field Title	Field Length
A	MSGID	M			MESSAGE IDENTIFICATION	
			M	1	Message Type	8X
			M	2	Originator	13X
B	OPT	M			OPTION	
			M	1	Primary Option	3A
			C[23]	2	Secondary Option	3A
C	FPN	O			FIRE PLAN NAME	
			M	1	Fire Plan Name	1-6AN
D	NAME	M			ACA NAME	
			M	1	ACA Name	1-6AN
E	DUR	O			DURATION	
			M	1	Date-Time Effective From	6N
			O	2	Date-Time Effective To	6N
F	GZE	C			GRID ZONE	
			M	1	Grid Zone	1-3NS
G	LEGA	C			LEG A	
			M	1	UTM Easting	6N
			M	2	UTM Northing	1-8N
			M	3	Width	1-4N
			M	4	Minimum Altitude	1-5NS
			M	5	Maximum Altitude	1-5NS
H	LEGB	C			LEG B	
			M	1	UTM Easting	6N
			M	2	UTM Northing	1-8N
			M	3	Width	1-4N
			M	4	Minimum Altitude	1-5NS
			M	5	Maximum Altitude	1-5NS
I	LEGC	C			LEG C	
			M	1	UTM Easting	6N
			M	2	UTM Northing	1-8N
			M	3	Width	1-4N
			M	4	Minimum Altitude	1-5NS
			M	5	Maximum Altitude	1-5NS
J	LEGD	C			LEG D	
			M	1	UTM Easting	6N
			M	2	UTM Northing	1-8N
			M	3	Width	1-4N
			M	4	Minimum Altitude	1-5NS
			M	5	Maximum Altitude	1-5NS

[23] FIELD 2 IN SET B (OPT) IS PROHIBITED IF FIELD 1 IN SET A (MSGID) EQUALS "SPRT.ACA".

K	LEGE	C			LEG E	
			M	1	UTM Easting	6N
			M	2	UTM Northing	1-8N
			M	3	Width	1-4N
			M	4	Minimum Altitude	1-5NS
			M	5	Maximum Altitude	1-5NS
L	LEGF	C			LEG F	
			M	1	UTM Easting	6N
			M	2	UTM Northing	1-8N
			M	3	Width	1-4N
			M	4	Minimum Altitude	1-5NS
			M	5	Maximum Altitude	1-5NS
M	LEGG	O			LEG G	
			M	1	UTM Easting	6N
			M	2	UTM Northing	1-8N
			M	3	Width	1-4N
			M	4	Minimum Altitude	1-5NS
			M	5	Maximum Altitude	1-5NS
N	LEGH	O			LEG H	
			M	1	UTM Easting	6N
			M	2	UTM Northing	1-8N

21.3 Set and Field Definitions.

21.3.1 Set Identifier: MSGID (M) (Message Identification)

Field 1 - Message Type (M). Eight (8) characters used to specify the message type. Legal entry:

SPRT.ACA.

Field 2 - Originator (M). Thirteen (13) characters used to specify the logical name of the message originator. Legal entries:

Digits: 0 to 9
Letters: A to Z
Special Character : Period (.)
Blank character (Hex 20).

The period is only valid in the second, fourth, sixth, and tenth character positions, and shall always be present in those character positions.

21.3.2 Set Identifier: OPT (M) (Option)

Field 1 - Primary Option (M). Three (3) letters used to specify the primary option to be taken. Legal entries:

CAN - Cancel
XMT - Transmit.

Field 2 - Secondary Option (C). This field shall NOT be specified in this message.

21.3.3 Set Identifier: FPN (O) (Fire Plan Name)

Field 1 - Fire Plan Name (M). One (1) to six (6) characters used to specify the name of the fire plan to which the information relates. Legal entries:

Digits: 0 to 9
Letters: A to Z.

21.3.4 Set Identifier: NAME (M) (ACA Name)

Field 1 - ACA Name (M). One (1) to six (6) characters used to specify the name of the air space coordination area. Legal entries:

Digits: 0 to 9
Letters: A to Z.

21.3.5 Set Identifier: DUR (O) (Duration)

Field 1 - Date-Time Effective From (M). Six (6) digits used to specify the ZULU beginning date-time of the ACA. The first two (2) digits represent the day of the month, the second two (2) digits, the hour of the day, and the final two (2) digits, the minutes of the hour. Legal entries:

Day: 01 to 31
Hour: 00 to 23
Minute: 00 to 59.

Field 2 - Date-Time Effective To (O). Six (6) digits used to specify the ZULU ending date-time of the ACA. The first two (2) digits represent the day of the month, the second two (2) digits, the hour of the day, and the final two (2) digits, the minutes of the hour. Legal entries:

Day: 01 to 31
Hour: 00 to 23
Minute: 00 to 59.

21.3.6 Set Identifier: GZE (C) (Grid Zone)

Field 1 - Grid Zone (M). One (1) to three (3) characters used to specify the earth hemisphere and grid zone designator. One (1) or two (2) digits used to specify the grid zone at the location preceded by one (1) character used to specify the earth hemisphere. Grid zones in the southern hemisphere shall be preceded by a minus (-) sign. A Plus (+) is understood if a minus (-) is not specified but may be entered. Legal entries:

Northern: 1 to 60
Southern: -1 to -60.

21.3.7 Set Identifier: LEGA (C) (Leg A)

Field 1 - UTM Easting (M). Six (6) digits used to specify the higher order Easting of the first leg of the air corridor in meters. Legal entries:

000000 to 999999.

Field 2 - UTM Northing (M). One (1) to eight (8) digits used to specify the higher order Northing of the first leg of the air corridor in meters. Legal entries:

Northern Hemisphere: 0 to 10000000
Southern Hemisphere: 0 to 11000000.

Field 3 - Width (M). One (1) to four (4) digits used to specify the width of the ACA in meters. The width is the distance between the coordinates specified in Sets LEGA and LEGB. Legal entries:

1 to 9999.

Field 4 - Minimum Altitude (M). One (1) to five (5) characters used to specify the minimum altitude of LEGA in meters. Altitudes below sea level shall be preceded by a minus (-) sign. Plus (+) is understood if a minus (-) is not specified. The minimum altitude is the altitude between the coordinates specified in Sets LEGA and LEGB. Legal entries:

-400 to 99999

Field 5 - Maximum Altitude (M). One (1) to five (5) characters used to specify the maximum altitude of LEGA in meters. Altitudes below sea level shall be preceded by a minus (-) sign. Plus (+) is understood if a minus (-) is not specified. The maximum altitude is the altitude between the coordinates specified in Sets LEGA and LEGB. Legal entries:

-400 to 99999.

21.3.8 Set Identifier: LEGB (C) (Leg B)

Field 1 - UTM Easting (M). Six (6) digits used to specify the higher order Easting of the first leg of the air corridor in meters. Legal entries:

000000 to 999999.

Field 2 - UTM Northing (M). One (1) to eight (8) digits used to specify the higher order Northing of the first leg of the air corridor in meters. Legal entries:

Northern Hemisphere: 0 to 10000000
Southern Hemisphere: 0 to 11000000.

Field 3 - Width (M). One (1) to four (4) digits used to specify the width of the ACA in meters. The width is the distance between the coordinates specified in Sets LEGA and LEGB. Legal entries:

1 to 9999.

Field 4 - Minimum Altitude (M). One (1) to five (5) characters used to specify the minimum altitude of LEGA in meters. Altitudes below sea level shall be preceded by a minus (-) sign. Plus (+) is understood if a minus (-) is not specified. The minimum altitude is the altitude between the coordinates specified in Sets LEGA and LEGB. Legal entries:

-400 to 99999

Field 5 - Maximum Altitude (M). One (1) to five (5) characters used to specify the maximum altitude of LEGA in meters. Altitudes below sea level shall be preceded by a minus (-) sign. Plus (+) is understood if a minus (-) is not specified. The maximum altitude is the altitude between the coordinates specified in Sets LEGA and LEGB. Legal entries:

-400 to 99999.

21.3.9 Set Identifier: LEGC (C) (Leg C)

Field 1 - UTM Easting (M). Six (6) digits used to specify the higher order Easting of the first leg of the air corridor in meters. Legal entries:

000000 to 999999.

Field 2 - UTM Northing (M). One (1) to eight (8) digits used to specify the higher order Northing of the first leg of the air corridor in meters. Legal entries:

Northern Hemisphere: 0 to 10000000
Southern Hemisphere: 0 to 11000000.

Field 3 - Width (M). One (1) to four (4) digits used to specify the width of the ACA in meters. The width is the distance between the coordinates specified in Sets LEGA and LEGB. Legal entries:

1 to 9999.

Field 4 - Minimum Altitude (M). One (1) to five (5) characters used to specify the minimum altitude of LEGA in meters. Altitudes below sea level shall be preceded by a minus (-) sign. Plus (+) is understood if a minus (-) is not specified. The minimum altitude is the altitude between the coordinates specified in Sets LEGA and LEGB. Legal entries:

-400 to 99999

Field 5 - Maximum Altitude (M). One (1) to five (5) characters used to specify the maximum altitude of LEGA in meters. Altitudes below sea level shall be preceded by a minus (-) sign. Plus (+) is understood if a minus (-) is not specified. The maximum altitude is the altitude between the coordinates specified in Sets LEGA and LEGB. Legal entries:

-400 to 99999.

21.3.10 Set Identifier: LEGD (C) (Leg D)

Field 1 - UTM Easting (M). Six (6) digits used to specify the higher order Easting of the first leg of the air corridor in meters. Legal entries:

000000 to 999999.

Field 2 - UTM Northing (M). One (1) to eight (8) digits used to specify the higher order Northing of the first leg of the air corridor in meters. Legal entries:

Northern Hemisphere: 0 to 10000000
Southern Hemisphere: 0 to 11000000.

Field 3 - Width (M). One (1) to four (4) digits used to specify the width of the ACA in meters. The width is the distance between the coordinates specified in Sets LEGA and LEGB. Legal entries:

1 to 9999.

Field 4 - Minimum Altitude (M). One (1) to five (5) characters used to specify the minimum altitude of LEGA in meters. Altitudes below sea level shall be preceded by a minus (-) sign. Plus (+) is understood if a minus (-) is not specified. The minimum altitude is the altitude between the coordinates specified in Sets LEGA and LEGB. Legal entries:

-400 to 99999

Field 5 - Maximum Altitude (M). One (1) to five (5) characters used to specify the maximum altitude of LEGA in meters. Altitudes below sea level shall be preceded by a minus (-) sign. Plus (+) is understood if a minus (-) is not specified. The maximum altitude is the altitude between the coordinates specified in Sets LEGA and LEGB. Legal entries:

-400 to 99999.

21.3.11 Set Identifier: LEGE (C) (Leg E)

Field 1 - UTM Easting (M). Six (6) digits used to specify the higher order Easting of the first leg of the air corridor in meters. Legal entries:
000000 to 999999.

Field 2 - UTM Northing (M). One (1) to eight (8) digits used to specify the higher order Northing of the first leg of the air corridor in meters. Legal entries:
Northern Hemisphere: 0 to 10000000
Southern Hemisphere: 0 to 11000000.

Field 3 - Width (M). One (1) to four (4) digits used to specify the width of the ACA in meters. The width is the distance between the coordinates specified in Sets LEGA and LEGB. Legal entries:
1 to 9999.

Field 4 - Minimum Altitude (M). One (1) to five (5) characters used to specify the minimum altitude of LEGA in meters. Altitudes below sea level shall be preceded by a minus (-) sign. Plus (+) is understood if a minus (-) is not specified. The minimum altitude is the altitude between the coordinates specified in Sets LEGA and LEGB. Legal entries:
-400 to 99999

Field 5 - Maximum Altitude (M). One (1) to five (5) characters used to specify the maximum altitude of LEGA in meters. Altitudes below sea level shall be preceded by a minus (-) sign. Plus (+) is understood if a minus (-) is not specified. The maximum altitude is the altitude between the coordinates specified in Sets LEGA and LEGB. Legal entries:
-400 to 99999.

21.3.12 Set Identifier: LEGF (C) (Leg F)

Field 1 - UTM Easting (M). Six (6) digits used to specify the higher order Easting of the first leg of the air corridor in meters. Legal entries:
000000 to 999999.

Field 2 - UTM Northing (M). One (1) to eight (8) digits used to specify the higher order Northing of the first leg of the air corridor in meters. Legal entries:
Northern Hemisphere: 0 to 10000000
Southern Hemisphere: 0 to 11000000.

Field 3 - Width (M). One (1) to four (4) digits used to specify the width of the ACA in meters. The width is the distance between the coordinates specified in Sets LEGA and LEGB. Legal entries:
1 to 9999.

Field 4 - Minimum Altitude (M). One (1) to five (5) characters used to specify the minimum altitude of LEGA in meters. Altitudes below sea level shall be preceded by a minus (-) sign. Plus (+) is understood if a minus (-) is not specified. The minimum altitude is the altitude between the coordinates specified in Sets LEGA and LEGB. Legal entries:

-400 to 99999

Field 5 - Maximum Altitude (M). One (1) to five (5) characters used to specify the maximum altitude of LEGA in meters. Altitudes below sea level shall be preceded by a minus (-) sign. Plus (+) is understood if a minus (-) is not specified. The maximum altitude is the altitude between the coordinates specified in Sets LEGA and LEGB. Legal entries:
-400 to 99999.

21.3.13 Set Identifier: LEGG (O) (Leg G)

Field 1 - UTM Easting (M). Six (6) digits used to specify the higher order Easting of the first leg of the air corridor in meters. Legal entries:
000000 to 999999.

Field 2 - UTM Northing (M). One (1) to eight (8) digits used to specify the higher order Northing of the first leg of the air corridor in meters. Legal entries:
Northern Hemisphere: 0 to 10000000
Southern Hemisphere: 0 to 11000000.

Field 3 - Width (M). One (1) to four (4) digits used to specify the width of the ACA in meters. The width is the distance between the coordinates specified in Sets LEGA and LEGB. Legal entries:
1 to 9999.

Field 4 - Minimum Altitude (M). One (1) to five (5) characters used to specify the minimum altitude of LEGA in meters. Altitudes below sea level shall be preceded by a minus (-) sign. Plus (+) is understood if a minus (-) is not specified. The minimum altitude is the altitude between the coordinates specified in Sets LEGA and LEGB. Legal entries:
-400 to 99999

Field 5 - Maximum Altitude (M). One (1) to five (5) characters used to specify the maximum altitude of LEGA in meters. Altitudes below sea level shall be preceded by a minus (-) sign. Plus (+) is understood if a minus (-) is not specified. The maximum altitude is the altitude between the coordinates specified in Sets LEGA and LEGB. Legal entries:
-400 to 99999.

21.3.14 Set Identifier: LEGH (O) (Leg H)

Field 1 - UTM Easting (M). Six (6) digits used to specify the higher order Easting of the eighth leg of the air corridor in meters. Legal entries:
000000 to 999999.

Field 2 - UTM Northing (M). One (1) to eight (8) digits used to specify the higher order Northing of the eighth leg of the air corridor in meters. Legal entries:
Northern Hemisphere: 0 to 10000000
Southern Hemisphere: 0 to 11000000.

21.4 Message Processing

21.4.1 Cases

CASE: Establish an Air Coordination Area In Current Operations
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified "XMT" Transmit)
AND Set NAME
AND Set DUR
AND Set GZE
AND Set LEGA
AND Set LEGH
AND NOT Set FPN
END CASE

CASE: Establish a Fire Plan Air Coordination Area
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified "XMT" (Transmit)
AND Set FPN
AND Set NAME
AND Set DUR
AND Set GZE
AND Set LEGA
AND Set LEGH
END CASE

CASE: Delete An Air Coordination Area In Current Operations
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified "CAN" (Cancel)
AND Set NAME
AND NOT Set FPN
AND NOT Set DUR
AND NOT Set GZE
AND NOT Set LEGA through Set LEGH
END CASE

CASE: Delete A Fire Plan Air Coordination Area
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified "CAN" (Cancel)
AND Set FPN
AND Set NAME
AND NOT Set DUR
AND NOT Set GZE
AND NOT Set LEGA through Set LEGH
END CASE

21.4.2 Conditions

IF Set LEGA is specified
THEN Set GZE (Grid Zone) shall be specified

ENDIF
IF any of Sets LEGB, LEGC, LEGD, LEGE, LEGF, and LEGG are specified
THEN All sets preceding the last set shall be specified
ENDIF

21.5 Expected Response

No response is expected by the SPRT.ACA message originator.

21.6 Special Considerations

21.6.1 All eight legs are not necessary to establish an air coordination area; however, a minimum of two legs (LEGA and LEGH) shall be required.

21.6.2 IF Set FPN (Fire Plan Name) is specified
AND The fire plan specified by Set FPN if specified does NOT exist
THEN The message will be rejected
ENDIF

21.6.3 IF Field 1 (Primary Option) of Set OPT (Option) is specified “CAN” (Cancel)
THEN The specified ACA shall be deleted from current operations
OR IF Set FPN is specified the ACA shall be deleted from the specified fire plan
ENDIF

22. SPRT.GEOM

22.1 General

22.1.1 This message will be used to establish or delete battlefield geometries including Fire Support Co-ordination Measures and boundaries ; e.g. target areas, zones of fire, etc., in support of land combat operations for current operations or for a fire plan.

22.2 Message Content

Ser	SET ID	Set OCC	FLD OCC	Fld No	Field Title	Field Length
A	MSGID	M			MESSAGE IDENTIFICATION	
			M	1	Message Type	9X
			M	2	Originator	13X
B	OPT	M			OPTION	
			M	1	Primary Option	3A
			C	2	Secondary Option	3A
C	DUR	C			GEOMETRY DURATION	
			M	1	Date-Time Effective From	6N
			C	2	Date-Time Effective To	6N
D	BGEOM	M			BATTLEFIELD GEOMETRY	
			M	1	Geometry Type	2-5A
			M	2	Geometry Type Name	1-6AN
E	ATH	O			ESTABLISHING AUTHORITY	
			M	1	Establishing Authority	1-10AN
F	FPN	O			FIRE PLAN NAME	
			M	1	Fire Plan Name	1-6AN
G	PNT	C			NON-CIRCULAR GEOMETRY	
			M	1	Point Sequence Number	1-2N
			M	2	UTM Easting	6N
			M	3	UTM Northing	1-8N
H	CIR	C			CIRCULAR GEOMETRY	
			M	1	UTM Easting	6N
			M	2	UTM Northing	1-8N
			M	3	Radius	2-4N
I	GZE	C			GRID ZONE	
			M	1	Grid Zone	1-3NS
J	ARE	C			AMMUNITION RESTRICTED	
			M	1	Ammunition Restricted	2A
K	BDY	C			BOUNDARY IDENTIFICATION	
			M	1	Boundary Identifier	1-6ANS[24]

22.3 Set and Field Definitions

22.3.1 Set Identifier: MSGID (M) (Message Identification)

[24] All special characters except ; and ,

Field 1 - Message Type (M). Nine (9) characters used to specify the message type. Legal entry:

SPRT.GEOM.

Field 2 - Originator (M). Thirteen (13) characters used to specify the logical name of the message originator. Legal entries:

Digits: 0 to 9
Letters: A to Z
Special Character : Period (.)
Blank character (Hex 20).

The period is only valid in the second, fourth, sixth, and tenth character positions, and shall always be present in those character positions.

22.3.2 Set Identifier: OPT (M) (Option)

Field 1 - Primary Option (M). Three (3) letters used to specify the primary option to be taken. Legal entries:

CAN - Cancel
XMT - Transmit.

Field 2 - **Secondary Option (C).** Three (3) letters used to specify the secondary option to be taken. Legal entry:

APT - Additional Points.

22.3.3 Set Identifier: DUR (C) (Geometry Duration)

Field 1 - Date-Time Effective From (M). Six (6) digits used to specify the ZULU beginning date-time of the specified geometry. The first two (2) digits represent the day of the month, the second two (2) digits, the hour of the day, and the final two (2) digits, the minutes of the hour. Legal entries:

Day: 01 to 31
Hour: 00 to 23
Minutes: 00 to 59.

Field 2 - Date-Time Effective To (C). Six (6) digits used to specify the ZULU ending date-time of the specified geometry. The first two (2) digits represent the day of the month, the second two (2) digits, the hour of the day, and the final two (2) digits, the minutes of the hour. Legal entries:

Day: 01 to 31
Hour: 00 to 23
Minute: 00 to 59.

22.3.4 Set Identifier: BGEOM (M) (Battlefield Geometry)

Field 1 - Geometry Type (M). Two (2) to five (5) letters used to specify the type of battlefield geometry. See Legal Entries Table 30. Legal Entries for Battlefield Geometry for the codes.

Field 2 - Geometry Type Name (M). One (1) to six (6) characters used to specify the name of the battlefield geometry. Legal entries:

Digits: 0 to 9
Letters: A to Z.

22.3.5 Set Identifier: ATH (O) (Establishing Authority)

Field 1 - Establishing Authority (M). One (1) to ten (10) characters used to establish the coordinating/establishing agency. Legal entries:
Digits: 0 to 9
Letters: A to Z.

22.3.6 Set Identifier: FPN (O) (Fire Plan Name)

Field 1 - Fire Plan Name (M). One (1) to six (6) characters used to specify the name of the fire plan to which the information relates. Legal entries:
Digits: 0 to 9
Letters: A to Z.

22.3.7 Set Identifier: PNT (C) (Non-Circular Geometry

Field 1 - Point Sequence Number (M). One (1) or two (2) digits used to specify the point location number. Legal entries:
1 to 30.

Field 2 - UTM Easting (M). Six (6) digits used to specify the higher order Easting of the battlefield geometry area in meters. Legal entries:
000000 to 999999.

Field 3 - UTM Northing (M). One (1) to eight (8) digits used to specify the higher order Northing of the battlefield geometry area in meters. Legal entries:
Northern Hemisphere: 0 to 10000000
Southern Hemisphere: 0 to 11000000.
NOTE: Fields 1, 2, and 3 may be repeated as a group up to nine (9) times, initial plus eight (8).

22.3.8 Set Identifier: CIR (C) (Circular Geometry)

Field 1 - UTM Easting (M). Six (6) digits used to specify the higher order Easting of the circular battlefield geometry location in meters. Legal entries:
000000 to 999999.

Field 2 - UTM Northing (M). One (1) to eight (8) digits used to specify the higher order Northing of the circular battlefield geometry location in meters. Legal entries:
Northern Hemisphere: 0 to 10000000
Southern Hemisphere: 0 to 11000000.

Field 3 - Radius (M). Two (2) to four (4) digits used to specify the radius of the location in meters. Legal entries:
10 to 9999.

22.3.9 Set Identifier: GZE (C) (Grid Zone)

Field 1 - Grid Zone (M). One (1) to three (3) characters used to specify the earth hemisphere and grid zone designator. One (1) or two (2) digits used to specify the grid zone at the location preceded by one (1) character used to specify the earth hemisphere. Grid zones in the southern hemisphere shall be preceded by a minus (-) sign. Plus (+) is understood if a minus (-) is not specified but may be entered. Legal entries:

Northern: 1 to 60
Southern: -1 to -60.

22.3.10 Set Identifier: ARE (C) (Ammunition Restricted)

Field 1 - Ammunition Restricted (M). Two (2) letters used to specify the ammunition restricted within a fire coordination area. Legal entries:

HE - High Explosive
IL - Illumination
SM - Smoke
BO - Bomblet
AT - Mines
AL - All Munitions.

NOTE: Field 1 may be repeated as a group up to two (2) times, initial plus one to allow for multiple restrictions.

22.3.11 Set Identifier: BDY (C) (Boundary Identification).

Field 1 - Boundary Identifier (M). One (1) to six (6) characters used to specify the units on the left and right of the boundary specified in Set BGEOM. Legal entries:

Digits: 0 to 9
Letters: A to Z

Special characters, except the semicolon (;) and comma (,).
NOTE: Field 1 may be repeated as a group up to two (2) times, initial plus one (1).

NOTE: The first iteration of BDY2 will the identification of the unit to the left of the boundary facing the objective and the second iteration will be the unit to the right of the boundary facing the objective.

22.4 Message Processing

22.4.1 Cases

CASE: Establish a Circular Battlefield Geometry in Current Operations
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified “XMT” (Transmit)
AND Set DUR
AND Set BGEOM
AND Set GZE
AND Set CIR
AND NOT Set FPN
AND NOT Set PNT
END CASE

CASE: Establish a Non-Circular Battlefield Geometry in Current Operations
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified “XMT” (Transmit)
AND Set DUR
AND Set BGEOM
AND Set GZE
AND Set PNT
AND NOT Set FPN
AND NOT Set CIR
END CASE

CASE: Establish a Circular Battlefield Geometry in a Fire Plan
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified “XMT” (Transmit)
AND Set DUR
AND Set BGEOM
AND Set FPN
AND Set GZE
AND Set CIR
AND NOT Set PNT
END CASE

CASE: Establish a Non-Circular Battlefield Geometry in a Fire Plan
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified “XMT” (Transmit)
AND Set DUR
AND Set BGEOM
AND Set FPN
AND Set GZE
AND Set PNT
AND NOT Set CIR
END CASE

CASE: Cancel a Battlefield Geometry in Current Operations
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified “CAN” (Cancel)
AND Set BGEOM
AND NOT Set DUR
AND NOT Set ATH
AND NOT Set FPN
AND NOT Set PNT
AND NOT Set CIR
AND NOT Set GZE
AND NOT Set ARE
AND NOT Set BDY
END CASE

CASE: Cancel a Battlefield Geometry in a Fire Plan
THIS CASE REQUIRES

Field 1 (Primary Option) of Set OPT (Option) specified “CAN” (Cancel)
AND Set BGEOM
AND Set FPN
AND NOT Set DUR
AND NOT Set ATH
AND NOT Set PNT
AND NOT Set CIR
AND NOT Set GZE
AND NOT Set ARE
AND NOT Set BDY
END CASE

22.4.2 Conditions

IF Field 2 (Secondary Option) of Set OPT (Option) is specified
THEN Set PNT (Non-Circular Geometry) shall be specified
ENDIF

IF Field 1 (Geometry Type) of Set BGEOM (Battlefield Geometry) is specified "FEBA" (Forward Edge of the Battle Area)
OR Field 1 of Set BGEOM is specified "FLOT" (Forward Line Own Troops)
THEN Field 2 (Date-Time Effective To) of Set DUR (Geometry Duration) shall NOT be specified
ENDIF

IF Set PNT (Non-Circular Geometry) is specified
THEN Set CIR (Circular Geometry) shall NOT be specified
ENDIF

IF Set CIR (Circular Geometry) is specified
THEN Set PNT (Non-Circular Geometry) shall NOT be specified
ENDIF

IF Set PNT (Non-Circular Geometry) is specified
OR Set CIR (Circular Geometry) is specified
THEN Set GZE (Grid Zone) shall be specified
ENDIF

IF Field 1 (Geometry Type) of Set BGEOM (Battlefield Geometry) is specified "RFA" (Restricted Fire Area)
THEN Set ARE (Ammunition Restricted) shall be specified
ELSE Set ARE shall NOT be specified
ENDIF

IF Field 1 (Geometry Type) of Set BGEOM (Battlefield Geometry) is specified “BDRY” (Boundary)
THEN Set BDY may be specified
ELSE Set BDY shall NOT be specified
ENDIF

22.5 Expected Response

22.5.1 No response is expected by the SPRT.GEOM originator.

22.6 Special Considerations

22.6.1 IF Field 2 (Secondary Option) of Set OPT (Option) is specified
THEN All data sets specified shall be stored
AND When the final message is received with Field 2 of Set OPT NOT specified
THEN The geometry specified by Set BGEOM (Battlefield Geometry) shall be processed
ENDIF

22.6.2 IF Set PNT (Non-Circular Geometry) is specified
AND Field 1 (Geometry Type) of Set BGEOM (Battlefield Geometry) is specified "CFL" (Coordinated Fire Line)
OR Field 1 of Set BGEOM is specified "FEBA" (Forward Edge of the Battle Area)
OR Field 1 of Set BGEOM is specified "FLOT" (Forward Line Own Troops)
OR Field 1 of Set BGEOM is specified "FSCL" (Fire Support Coordination Line)
OR Field 1 of Set BGEOM is specified "RFL" (Restricted Fire Line)
OR Field 1 of Set BGEOM is specified “LD” (Line of Departure)
OR Field 1 of Set BGEOM is specified “PL” (Phase Line)
OR Field 1 of Set BGEOM is specified “BDRY” (Boundary)
THEN The minimum points specified shall be 2 points
AND The maximum points specified shall be 30 points
AND Numbered from left to right facing the enemy or converging forces
ENDIF

IF Field 2 (Geometry Name) of Set BGEOM is specified with a different name for each type specified
THEN Multiple geometries of the type specified shall be established
ENDIF

22.6.3 IF Set PNT (Non-Circular Geometry) is specified
AND Field 1 (Geometry Type) of Set BGEOM (Battlefield Geometry) is specified "ZOF (Zone of Fire)
OR Field 1 of Set BGEOM is specified "CHA" (Chemical Hazard Area)
OR Field 1 of Set BGEOM is specified "MA" (Mined Area)
OR Field 1 of Set BGEOM is specified "MFLD" (Mine Field)
OR Field 1 of Set BGEOM is specified "NFA" (No Fire Area)
OR Field 1 of Set BGEOM is specified "RFA" (Restricted Fire Area)
OR Field 1 of Set BGEOM is specified "FFA" (Free Fire Area)
OR Field 1 of Set BGEOM is specified “TAREA” (Target Area)
OR Field 1 of Set BGEOM is specified “AOI” (Area of Interest)
OR Field 1 of Set BGEOM is specified “TAI” (Target Area of Interest)
THEN The minimum number of points specified shall be 3 points
AND The maximum number of points specified shall be 30 points
AND The final point specified shall close the area with the lowest point specified
ENDIF

22.6.4 IF Set PNT (Non-Circular Geometry) is specified
THEN The points specified by Field 1 (Point Sequence Number) shall be sequential from lowest to highest
AND Shall NOT contain any crossing segments
ENDIF

22.6.5 IF Field 1 (Primary Option) of Set OPT (Option) is specified "XMT" (Transmit)
AND A geometry of the type specified by Set BGEOM (Battlefield Geometry) does NOT exist
THEN The geometry shall be established by the type and name specified
ENDIF

22.6.6 IF Field 1 (Primary Option) of Set OPT (Option) is specified “CAN” (Cancel)
AND A geometry does NOT exist matching that specified by Set BGEOM (Geometry Type)
THEN The message will be rejected
ENDIF

22.6.7 IF Set PNT (Non-Circular Geometry) is specified
AND The geometry contains more than 9 points
THEN A maximum of 4 messages will be transmitted
AND All but the last shall define 9 points
AND All but the last shall specify Field 2 (Secondary Option) of Set OPT (Option) "APT" (Additional Points)
ENDIF

22.6.8 IF Set CIR (Circular Geometry) is specified
THEN Field 1 (Geometry Type) of Set BGEOM (Battlefield Geometry) shall be specified "AOI" (Area of Interest)
OR Field 1 of Set BGEOM shall be specified "CHA" (Chemical Hazard Area)
OR Field 1 of Set BGEOM shall be specified "FFA" (Free Fire Area)
OR Field 1 of Set BGEOM shall be specified "MA" (Mined Area)
OR Field 1 of Set BGEOM shall be specified "MFLD" (Mine Field)
OR Field 1 of Set BGEOM shall be specified "NFA" (No Fire Area)
OR Field 1 of Set BGEOM shall be specified "RFA" (Restricted Fire Area)
OR Field 1 of Set BGEOM shall be specified "TAI" (Target Area of Interest)
OR Field 1 of Set BGEOM shall be specified "TAREA" (Target Area)
OR Field 1 of Set BGEOM shall be specified "ZOF" (Zone of Fire)
ELSE The message will be rejected
ENDIF

22.6.9 IF two or more messages are required to transmit a battlefield geometry
AND Any message after the first specifies a change in data except in Set PNT (Non-Circular Geometry) or Field 2 (Secondary Option) of Set OPT (Option)
THEN The message will be rejected
AND The entire geometry will be canceled
ENDIF

22.6.10 IF Set FPN (Fire Plan Name) is specified
AND The Fire Plan specified by Set FPN does not exist

THEN The message shall be rejected
ENDIF

22.6.11 IF Set PNT (Non-Circular Geometry) is specified
AND Field 1 (Geometry Type) of Set BGEOM (Battlefield Geometry) is specified "CP" (Check Point)
AND Field 1 of Set BGEOM is specified "RP" (Release Point)
AND Field 1 of Set BGEOM is specified "SP" (Start Point)
THEN The number of points specified shall be 1
ELSE The message shall be rejected
ENDIF

23 SYS.RFR

23.1 General

23.1.1 This message will be used to establish or delete a request for ammunition status reports, fire unit status reports, firing sites, battlefield geometry, friendly unit locations, fire plan target lists, and other applicable reports.

23.2 Message Content

Ser	SET ID	SET OCC	FLD OCC	Fld No	Field Title	Field Length
A	MSGID	M			MESSAGE IDENTIFICATION	
			M	1	Message Type	7X
			M	2	Originator	13X
B	OPT	M			OPTION	
			M	1	Primary Option	3A
			C[25]	2	Secondary Option	3A
C	DTG	M			DATE-TIME	
			M	1	Date-Time Group	6N
D	FPN	C			FIRE PLAN NAME	
			M	1	Fire Plan Name	1-6AN
E	RQMT	C			REPORT REQUIREMENT	
			M	1	Report Type	3-12[26]AS
			O	2	Report Frequency	4-8A
			O	3	Date-Time Effective From	6N
			O	4	Date-Time Effective To	6N
F	TLD	C			TARGET LIST DESIGNATOR	
			M	1	Target List Designator	3A
G	BGEOM	C			BATTLEFIELD GEOMETRY	
			M	1	Geometry Type	2-5A
			O	2	Geometry Type Name	1-6AN
H	UNT	C			UNIT	
			O	1	Section	1ANB
			O	2	Platoon	1ANB
			O	3	Battery/Company	1ANB
			M	4	Battalion/Regiment	1-3ANB
			O	5	Regiment/Brigade/ Division	1-3ANB

23.3 Set and Field Definitions

23.3.1 Set Identifier: MSGID (M) (Message Identification)

Field 1 - Message Type (M). Seven (7) characters used to specify the message type. Legal entry:

[25] FIELD 2 IN SET B (OPT) IS PROHIBITED IF FIELD 1 IN SET A (MSGID) EQUALS "SYS.RFR".
[26] NBC.1 BIOCHEM requires 12 characters.

SYS.RFR.

Field 2 - Originator (M). Thirteen (13) characters used to specify the logical name of the message originator. Legal entries:

Digits: 0 to 9
Letters: A to Z
Special Character : Period (.)
Blank character (Hex 20).

The period is only valid in the second, fourth, sixth, and tenth character positions, and shall always be present in those character positions.

23.3.2 Set Identifier: OPT (M) (Option)

Field 1 - Primary Option (M). Three (3) letters used to specify the primary option to be taken. Legal entries:

CAN - Cancel
XMT - Transmit.

Field 2 - Secondary Option (C). This field shall NOT be specified in this message.

23.3.3 Set Identifier: DTG (M) (Date-Time).

Field 1 - Date-Time Group (M). Six (6) digits used to specify the ZULU date-time of the message. The first two (2) digits represent the day of the month, the second two (2) digits, the hour of the day, and the final two (2) digits, the minutes of the hour. Legal entries:

Day: 01 to 31
Hour: 00 to 23
Minutes: 00 to 59.

23.3.4 Set Identifier: FPN (C) (Fire Plan Name)

Field 1 - Fire Plan Name (M). One (1) to six (6) characters used to specify the name of the fire plan to which the information relates. Legal entries:

Digits: 0 to 9
Letters: A to Z.

23.3.5 Set Identifier: RQMT (C) (Report Requirement)

Field 1 - Report Type (M). Three (3) to twelve (12) characters used to specify the report type requested. Legal entries:

AFU = AFU.FUS + AFU.AMS
AFU.AMS
AFU.FUS
NNFP.RESFU
SPRT.ACA
SPRT.GEOM

Field 2 - Report Frequency (O). Four (4) to eight (8) letters used to specify how often the report is requested. See **Table 32. Legal Entries for Report Frequency** for the codes.

Field 3 - Date-Time Effective From (O). Six (6) digits used to specify the ZULU beginning date-time for which the first report is requested. The first two (2) digits represent the day of the month, the second two (2) digits, the hour of the day, and the final two (2) digits, the minutes of the hour. Legal entries:

Day: 00 to 31
Hour: 00 to 23
Minutes: 00 to 59.

Field 4 - **Date-Time Effective To (O).** Six (6) digits used to specify the ZULU date-time the last report is requested. The first two (2) digits represent the day of the month, the second two (2) digits, the hour of the day, and the final two (2) digits, the minutes of the hour. Legal entries:

Day: 01 to 31
Hour: 00 to 23
Minutes: 00 to 59.

23.3.6 Set Identifier: TLD (C) (Target List Designator)

Field 1 - Target List Designator (M). Three (3) letters used to specify the fire plan target list. Legal entries:

FPL - Fire Plan Target List
TIS - Targets in the Schedule of Fires

23.3.7 Set Identifier: BGEOM (C) (Battlefield Geometry)

Field 1 - Geometry Type (M). Two (2) to five (5) letters used to specify the type of battlefield geometry. See **Table 32. Legal Entries for Report Frequency** for the codes.

Field 2 - Geometry Type Name (O). One (1) to six (6) characters used to specify the name of the battlefield geometry. Legal entries:

Digits: 0 to 9
Letters: A to Z.

23.3.8 Set Identifier: UNT (C) (Unit)

Field 1 - Section (O). One (1) character used to specify the section identification. Legal entries:

Digits: 0 to 9
Letters: A to Z
Space (Hex 20).

Field 2 - Platoon (O). One (1) character used to specify the platoon identification. Legal entries:

Digits: 0 to 9
Letters: A to Z
Space (Hex 20).

Field 3 - Battery/Company (O). One (1) character used to specify the battery/company identification. Legal entries:

Digits: 0 to 9
Letters: A to Z

Space (Hex 20).

Field 4 - Battalion/Regiment (M). One (1) to three (3) characters used to specify the battalion/regiment identification. Legal entries:

Digits: 0 to 9
Letters: A to Z
Space (Hex 20).

Field 5 - Regiment/Brigade/Division (O). One (1) to three (3) characters used to specify the regiment/brigade/division identification. Legal entries:

Digits: 0 to 9
Letters: A to Z
Space (Hex 20).

23.4 Message Processing

23.4.1 Cases

CASE: Request a Report In current Operations
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified "XMT" (Transmit)
AND Set DTG
AND Set RQMT
AND NOT Set FPN
AND NOT Set TLD
AND NOT Set UNT
AND NOT Set BGEOM
END CASE

CASE: Request a Report for a Fire Plan
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified "XMT" (Transmit)
AND Set DTG
AND Set RQMT
AND Set FPN
AND NOT Set TLD
AND NOT Set UNT
AND NOT Set BGEOM
END CASE

CASE: Request a Report for a Fire Unit in Current Operations
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified "XMT" (Transmit)
AND Set DTG
AND Set RQMT
AND Set UNT
AND NOT Set FPN
AND NOT Set TLD
AND NOT Set BGEOM
END CASE

CASE: Request a Report for a Fire Unit for a Fire Plan
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified “XMT” (Transmit)
AND Set DTG
AND Set RQMT
AND Set UNT
AND Set FPN
AND NOT Set TLD
AND NOT Set BGEOM
END CASE

CASE: Request a Fire Plan Target List
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified “XMT” (Transmit)
AND Set DTG
AND Set FPN
AND Set TLD
AND NOT Set RQMT
AND NOT Set BGEOM
AND NOT Set UNT
END CASE

CASE: Request a Specific Geometry in Current Operations
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified “XMT” (Transmit)
AND Set DTG
AND Set RQMT
AND Set BGEOM
AND NOT Set FPN
AND NOT Set TLD
AND NOT Set UNT
END CASE

CASE: Request a Specific Geometry for a Fire Plan
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified “XMT” (Transmit)
AND Set DTG
AND Set RQMT
AND Set BGEOM
AND Set FPN
AND NOT Set TLD
AND NOT Set UNT
END CASE

CASE: Cancel a Report Request in Current Operations
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified “CAN” Cancel)
AND Set DTG
AND Set RQMT

AND NOT Set FPN
AND NOT Set TLD
AND NOT Set UNT
AND NOT Set BGEOM
END CASE

CASE: Cancel a Report Request for a Fire Plan
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified “CAN” (Cancel)
AND Set DTG
AND Set RQMT
AND Set FPN
AND NOT Set TLD
AND NOT Set UNT
AND NOT Set BGEOM
END CASE

CASE: Cancel a Report Request for a Fire Unit in Current Operations
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified “CAN” (Cancel)
AND Set DTG
AND Set RQMT
AND Set UNT
AND NOT Set FPN
AND NOT Set TLD
AND NOT Set BGEOM
END CASE

CASE: Cancel a Report Request for a Fire Unit for a Fire Plan
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified “CAN” (Cancel)
AND Set DTG
AND Set RQMT
AND Set UNT
AND Set FPN
AND NOT Set TLD
AND NOT Set BGEOM
END CASE

CASE: Cancel a Specific Geometry Request in Current Operations
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified “CAN” (Cancel)
AND Set DTG
AND Set RQMT
AND Set BGEOM
AND NOT Set FPN
AND NOT Set TLD
AND NOT Set UNT
END CASE

CASE: Cancel a Specific Geometry Request for a Fire Plan
THIS CASE REQUIRES
Field 1 (Primary Option) of Set OPT (Option) specified “CAN” (Cancel)
AND Set DTG
AND Set RQMT
AND Set BGEOM
AND Set FPN
AND NOT Set TLD
AND NOT Set UNT
END CASE

23.4.2 Conditions

IF Set RQMT (Request Requirement) is specified
THEN Set TLD (Target List Designator) shall NOT be specified
ENDIF

IF Set TLD (Target List Designator) is specified
THEN Set FPN (Fire Plan Name) shall be specified
AND Set RQMT (Report Request) shall NOT be specified
AND Set BGEOM (Battlefield Geometry) shall NOT be specified
AND Set UNT (Fire Unit) shall NOT be specified
ENDIF

IF Set BGEOM (Battlefield Geometry) is specified
THEN Field 1 (Report Type) of Set RQMT (Report Requirement) shall be specified SPRT.GEOM
ENDIF

IF Field 1 (Report Type) of Set RQMT (Report Requirement) is specified SPRT.GEOM
OR Field 1 is specified SPRT.ACA
THEN Set UNT (Unit) shall NOT be specified
ENDIF

IF Set FPN (Fire Plan Name) is specified
AND Field 2 (Report Frequency) of Set RQMT (Report Requirement) is specified
THEN Field 2 shall be specified "ONCE" (Once) or
Field 2 shall be specified "ASCH" (As Changed)
ENDIF

23.5 Expected Response

23.5.1 Response messages of the type specified are expected by the SYS.RFR message originator.

23.5.2 IF Set FPN (Fire Plan Name) is specified
AND Set RQMT (Report Requirement) is specified
AND The report specified by Field 1 (Report Type) of Set RQMT is assigned to the fire plan
THEN The requested report shall be transmitted to the message originator

ENDIF

23.5.3 IF Set FPN (Fire Plan Name) is specified
AND Set TLD (Target List Designator) is specified
AND The target list specified by Set TLD has been established for the specified fire plan
THEN The target list requested shall be transmitted to the message originator
ENDIF

23.5.4 IF Set TLD (Target List Designator) is specified
AND The target list specified is assigned to the specified fire plan
THEN The target list specified shall be transmitted to the message originator
ENDIF

23.6 Special Considerations

23.6.1 IF Field 1 (Primary Option) of Set OPT is specified "XMT" (Transmit)
AND The report requested specified by Field 1 (Report Type) of Set RQMT (Report Requirement) does NOT exist
OR The geometry specified by Set BGEOM, if specified, does NOT exist
OR The unit specified by Set UNT if specified does NOT exist
THEN The message will be rejected
ENDIF

23.6.2 IF Field 1 (Primary Option) of Set OPT is specified "CAN" (Cancel)
AND The report requested specified by Field 1 (Report Type) of Set RQMT (Report Requirement) does NOT exist
OR The fire plan specified by Set FPN, if specified, does NOT exist
THEN The message will be rejected
ENDIF

23.6.3 IF Set FPN (Fire Plan Name) is specified
THEN Only reports associated with the fire plan specified by Set FPN are requested
ELSE Only reports associated with current operations are requested
ENDIF

23.6.4 IF Field 1 (Report Type) of Set RQMT (Report Requirement) is specified "SPRT.GEOM"
AND Set BGEOM (Battlefield Geometry) is NOT specified
THEN Reports are requested for all types of battlefield geometry
ENDIF

23.6.5 IF Field 1 (Report Type) of Set RQMT (ReportRequirement) is specified "AFU", "AFU.AMS" or "AFU.FUS"
AND Set UNT (Fire Unit) is NOT specified
THEN Status reports of the specified type(s) are requested for all fire units
ENDIF

23.6.6 IF Set RQMT (ReportRequirement) is specified
AND Field 2 (Report Frequency) of Set RQMT is NOT specified

AND/OR Field 3 (Date – Time Effective From) of Set RQMT is NOT specified
AND/OR Field 4 (Date – Time Effective To) of Set RQMT is NOT specified
THEN The requested report shall be transmitted one time only
ENDIF

23.6.7 IF Set TLD (Target List Designator) is specified
THEN The target list specified shall have been established for the fire plan specified by Set FPN
ENDIF

23.6.8 IF Field 1 (Geometry Type) of Set BGEOM (Battlefield Geometry) is specified
AND Field 2 (Geometry Type Name) is NOT specified
THEN All geometry of the type specified in Field 1 of Set BGEOM shall be transmitted
ENDIF

23.6.9 IF Field 1 (Geometry Type) of Set BGEOM (Battlefield Geometry) is specified
AND Field 2 (Geometry Type Name) of Set BGEOM is specified
THEN Only the geometry type of the specified name shall be transmitted
ENDIF

24. SYS.RRM

24.1 General

24.1.1 This message will be used to transmit a reply to a received message or to transmit plain text information as required, e.g., error response, amplifying instructions, operational orders, fire plan execution/cancelling, etc.

24.2 Message Content

Ser	SET ID	Set OCC	FLD OCC	Fld No	Field Title	Field Length
A	MSGID	M			MESSAGE IDENTIFICATION	
			M	1	Message Type	7X
			M	2	Originator	13X
B	REF	O			MESSAGE REFERENCE	
			M	1	Message Type	6-12X
			M	2	Originator	13X
			M	3	Date-Time of Reference	6N
C	REPLY	C			MESSAGE REPLY	
			M	1	Message Reply Code	3A
D	RMKS	C			REMARKS	
			M	1	Plain Text	1-353X

24.3 Set and Field Definitions

24.3.1 Set Identifier: MSGID (M) (Message Identification)

Field 1 - Message Type (M). Seven (7) characters used to specify the message type. Legal entry:

SYS.RRM.

Field 2 - Originator (M). Thirteen (13) characters used to specify the logical name of the message originator. Legal entries:

Digits: 0 to 9
Letters: A to Z
Special Character : Period (.)
Blank character (Hex 20).

The period is only valid in the second, fourth, sixth, and tenth character positions, and shall always be present in those character positions.

24.3.2 Set Identifier: REF (O) (Message Reference).

Field 1 - Message Type (M). Six (6) to twelve (12) characters used to specify the message type identification being replied to. See Table 12. Priority and Security Classification by Message Type, for the codes.

Field 2 - Originator (M). Thirteen (13) characters used to specify the logical name of the message originator to which a message is being replied. Legal entries:

Digits: 0 to 9

Letters: A to Z
Special Character : Period (.)
Blank character (Hex 20).
The period is only valid in the second, fourth, sixth, and tenth character positions, and shall always be present in those character positions.

Field 3 - Date-Time of Reference (M). Six (6) digits used to specify the ZULU date-time of the message being replied to. The first two (2) digits represent the day of the month, the second two (2) digits, the hour of the day, and the final two (2) digits, the minutes of the hour. Legal entries:
Day: 01 to 31
Hour: 00 to 23
Minutes: 00 to 59.

24.3.3 Set Identifier: REPLY (C) (Message Reply).

Field 1 - Message Reply Code (M). Three (3) letters used to specify a reply to the referenced message specified in Set REF. Legal entries:
WIL - Message understood; execution guaranteed.
ACK - Message understood; execution not yet guaranteed.
EMD - Message understood; execution must be modified.
NON - Message understood; execution impossible.
VER - Message not understood; verification requested.
COM - Execution of message completed.

24.3.4 Set Identifier: RMKS (C) (Remarks).

Field 1 - Plain Text (M). One (1) to three hundred fifty-three (353) characters used to compose a free text message as required. Legal entries:
Digits: 0 to 9
Letters: A to Z
Special characters, except the semicolon (;)
Blank character (Hex 20).
When transmitting a common formatted error response, then first 21 characters of Set RMKS shall follow the following format: "ERROR:aaa,SET:xxxxxx", where the aaa is a commonly defined ERROR code, the xxxxxx is the name of the set which is related to the error code, when applicable. After the ERROR code and the SET name, if applicable, there may or may not be additional plain text specified, and then the SET RMKS terminator ';'. Legal entries:
TEC - (Technical Error)
BAD - (Invalid Entry)
NOT - (Not Implemented)

24.4 Message Processing

24.4.1 Cases

CASE: Response
THIS CASE REQUIRES
Set REF
AND Set REPLY
END CASE

CASE: Transmit Plain Text
THIS CASE REQUIRES
Set RMKS
AND NOT Set REPLY
END CASE

24.4.2 Conditions

IF Set REPLY (Message Reply Data) is NOT specified
THEN Set RMKS (Remarks) shall be specified
ENDIF

IF Set RMKS (Remarks) is NOT specified
THEN Set REPLY (Message Reply Data) shall be specified
ENDIF

24.5 Expected Response

24.5.1 No response, other than that specifically requested by the received message, is expected by the SYS.RRM originator.

24.6 Special Considerations

24.6.1 IF Set RMKS (Remarks) is NOT specified
AND Set REPLY (Message Reply Data) is NOT specified
THEN The message will be rejected
ENDIF

24.6.2 IF transmitting a common error response
AND The formatted response defined in Set RMKS (Remarks) is NOT used
THEN The message shall NOT be rejected
ENDIF

25. Legal Entries

TYPE CODE	TYPE DEFINITION	SUBTYPE CODE	SUBTYPE DEFINITION
ADA	Air Defense Artillery	UNK	Unknown
		LT	Light
		MDM	Medium
		HV	Heavy
		MSL	Missile
		POS	Position
ARMOR	Armor	UNK	Unknown
		LT	Light
		MDM	Medium
		HV	Heavy
		APC	Armored Personnel Carrier
		POS	Position
ARTY	Artillery	UNK	Unknown
		LT	Light
		MDM	Medium
		HV	Heavy
		POS	Position
ASSY	Assembly Areas	UNK	Unknown
		TRP	Troops
		TRPVEH	Troops and Vehicles
		TRPMEC	Mechanized Troops
		TRPARM	Troops and Armor
BLDG	Building	UNK	Unknown
		WOOD	Wood
		MASNRY	Masonry
		CONCR	Concrete
		METAL	Metal
		SPCL	Special Purpose
BRIDGE	Bridge	UNK	Unknown
		FTPON	Foot Pontoon
		VEHPON	Vehicle Pontoon
		CONCR	Concrete
		WOOD	Wood
		STEEL	Steel
		SITE	Site
		RAFT	Raft
		FERRY	Ferry
CEN	Center	UNK	Unknown
		SMALL	Small
		BN	Battalion
		REGT	Regiment
		DIV	Division
		FWD	Forward
EQUIP	Equipment	UNK	Unknown
		RADAR	Radar
		EW	Electronic Warfare
		SLT	Search-light
		GDNC	Guidance
		LS	Loud-speaker
MORT	Mortars	UNK	Unknown
		LT	Light
		MDM	Medium
		HV	Heavy

TYPE CODE	TYPE DEFINITION	SUBTYPE CODE	SUBTYPE DEFINITION
		VH	Very Heavy
		POS	Position
PERS	Personnel	UNK	Unknown
		INF	Infantry
		OP	Observation Post
		PTL	Patrol
		WKPTY	Work Party
		POS	Position
RKTMSL	Rockets/Missiles	UNK	Unknown
		APERS	Anti-personnel
		LTMSL	Light Missile
		MDMMSL	Medium Missile
		HVMSL	Heavy Missile
		ATANK	Antitank
		POS	Position
SUPPLY	Supply Dump	UNK	Unknown
		CLV	Class 5
		CLIII	Class 3
		CLIV	Class 4
		CLI	Class 1
		CLII	Class 2
TER	Terrain Features	UNK	Unknown
		ROAD	Road
		JCT	Road Junction
		HILL	Hill
		DEFILE	Defile
		LDGSTR	Landing Strip
		RR	Railroad
VEH	Vehicle	UNK	Unknown
		LTWHL	Light Wheeled
		HVWHL	Heavy Wheeled
		RECO	Reconnaissance
		BOAT	Boats
		ACFT	Aircraft
		HEL	Helicopter
WPN	Weapons	UNK	Unknown
		LTMG	Light Machine Gun
		ATG	Antitank Gun
		HVMG	Heavy Machine Gun
		RCLR	Recoilless Rifle

Table 17. Legal Entries for Target Type/Subtype

	DEFINITION	
CODE	FIRST VOLLEY	SUBSEQUENT VOLLEYS
PRAND	Half Prone, Half Standing	All Prone
PRONE	Prone	Prone
PRUG	Prone	Dug In
PROVER	Prone	Under Overhead Cover
DUGIN	Dug In	Dug In
COVER	Under Overhead Cover	Under Overhead Cover

Table 18. Legal Entries for Degree of Protection

WEAPONS	MODEL
60MM	DAN60
81MM	L16A, NM95
82MM	CZE82
98MM	POL98
105MM	L118, L119, M101, M102, M119, Tr LG1.
120MM	120RT, CZE120, HBRaye, ROU120, LLPZM, POL120
122MM	2S1
152MM	CZE152, DANA, ROU152
155MM	109A3G, AS9039, AS9052, AUF1, FH70, FIRTIN, M109A2, M109A3, M109A4, M109A5, M109A5E, M109A6, M109L, M114A2, M1950, M198, M44T, M52T, Md1981, PANTER, PH2000, PH2KIT, PH2KNL, TRF1, 155SBT
203MM	M110A1, M110A2
122MM MLRS	CZE122, LAR122[27], T-122, BM21, RM70, WR40
140.5MM MLRS	TERUEL
160MM MLRS	LAR160[28]
227MM MLRS	TUR227
270MM MLRS	M270[29], MARS, M270E1

Table 19. Legal Entries for Weapons and Models[30]

CODE	DEFINITION
NEUT	Neutralized
BURN	Burning
DEST	Destroyed
UNK	Unknown
NOEF	No Effect
NEBN	Neutralized/Burning

Table 20. Legal Entries for Disposition of Target

[27] LAROM 122MM
[28] LAROM 160MM
[29] Includes ATACMS
[30] Only Mor used by Arty are included.

CODE	DEFINITION
PEREXP	Casualties to Personnel in Open
PERTNK	Casualties to Personnel in Tanks
PERAPC	Casualties to Personnel in APCs
PERVEH	Casualties to Personnel in Wheeled Vehicles
PEREAR	Casualties to Personnel in Earth Shelters
PERFOX	Casualties to Personnel in Foxholes
VEHEXP	Moderate Damage to Exposed Wheeled Vehicles
VEHSLD	Moderate Damage to Shielded Wheeled Vehicles
WHEART	Moderate Damage to Towed Artillery
TNKMOD	Moderate Damage to Tanks, APCs, and SP Artillery
BRIHRD	Moderate Damage to Hard Fixed Bridges
BRISFT	Moderate Damage to Soft Fixed Bridges
SUPPLY	Severe Damage to Supply Depots
COPCGO	Severe Damage to Randomly Parked Cargo/Transportation Helicopters
COPOBS	Severe Damage to Randomly Parked Light Observation Helicopters

Table 21. Legal Entries for Vulnerability Categories

WPN TYPE	PROPELLANT CODE	PROJECTILE CODE	FUZE CODE	AFU[1]	FM[2]
60MM		HEA = High Explosive	PD = Point Detonation	X	X
		HED = Anti-Personnel & Anti-Material Submunitions	TI[31] = Time Action	X	X
		SMK = Smoke			
		WP = Smoke White Phosphorous			
		ILL = Illuminating			
		IIR = Illuminating Infra Red			
		ILL = Illuminating			
81MM		HEA = High Explosive	PD = Point Detonation	X	X
		RP = Smoke Red Phosphorous	TI = Time Action	X	X
		WP = Smoke White Phosphorous	PDD = Point Detonation Delay		X
		ILL = Illuminating	MRF = Multi-Role Fuze	X	
			MRP = Multi-Role Fuze Point Detonation		X
			MRT = Multi-Role Fuze Time		X
			MRV = Multi-Role Fuze Variable Time		X
			MRF = Multi-Role Fuze	X	
			MRP = Multi-Role Fuze Point Detonation		X
			MRT = Multi-Role Fuze Time		X
			MRV = Multi-Role Fuze Variable Time		X
			MRD = Multi-Role Fuze Delay		X
82MM		HEA = High Explosive	PD = Point Detonation	X	X
98MM		HEA = High Explosive	PD = Point Detonation	X	X
		HEI = ATICM Anti-Tank Submunitions	PDD = Point Detonation Delay		X
			MRF = Multi-Role Fuze	X	
			MRP = Multi-Role Fuze Point Detonation		X
			MRT = Multi-Role Fuze Time		X
			MRV = Multi-Role Fuze Variable Time		X
			MRD = Multi-Role Fuze Delay		X
105MM		HEA = High Explosive	CP = Concrete Piercing	X	X
		HEC = APICM Anti-Personnel Submunitions	PD = Point Detonation	X	X
		RP = Smoke Red Phosphorous	PDD = Point Detonation Delay		X
		WP = Smoke White Phosphorous	TI = Time Action	X	X
		ILL = Illuminating	VT = Variable Time	X	X
		SMK = Smoke	VTD = Variable Time Desensitized		X
			MRF = Multi-Role Fuze	X	
			MRP = Multi-Role Fuze Point Detonation		X
			MRT = Multi-Role Fuze Time		X
			MRV = Multi-Role Fuze Variable Time		X
			MRD = Multi-Role Fuze Delay		X
120MM		HEA[32] = High Explosive	PD = Point Detonation	X	X
		HEI = ATICM Anti-Tank Submunitions	MRF = Multi-Role Fuze	X	
		SMK = Smoke	MRP = Multi-Role Fuze, Point Detonation		X
		WP = Smoke White Phosphorous	MRT = Multi-Role Fuze Time		X
		ILL = Illuminating	MRV = Multi-Role Fuze Variable Time		X
		IIR = Illuminating Infra Red	MRD = Multi-Role Fuze Delay		X
		HER = Rocket Assisted	TI = Time Action	X	X
		LEA = Leaflet/Propaganda	PDD = Point Detonation Delay[33]		X
			VT = Variable Time	X	X
122MM		HEA = High Explosive	PD = Point Detonation	X	X
		SMK = Smoke	MRF = Multi-Role Fuze	X	
		WP = Smoke White Phosphorous	MRP = Multi-Role Fuze Point Detonation		X
		ILL = Illuminating	MRT = Multi-Role Fuze Time		X

[31] TI includes both Mechanical and Electronic time fuzes.
[32] For ITA this includes the practice round.
[33] This includes Short Delay and Delay.

			MRV = Multi-Role Fuze Variable Time			X
			MRD = Multi-Role Fuze Delay			X
152MM		HEA = High Explosive	PD = Point Detonation		X	X
		ILL = Illuminating	MRF = Multi-Role Fuze		X	
		HED = DPICM Anti-Personnel & Anti-Material Submunitions	MRP = Multi-Role Fuze Point Detonation			X
		SMK = Smoke	MRT = Multi-Role Fuze Time			X
		HED = DPICM Anti-Personnel & Anti-Material Submunitions	MRV = Multi-Role Fuze Variable Time			X
			PDD = Point Detonation Delay[34]			X
			TI = Time Action		X	X
155MM	GREEN	HEA = High Explosive[35]	CP = Concrete Piercing		X	X
	WHITE	HEB = Improved High Explosive	PD = Point Detonation		X	X
	XRNGA = (Extended Range Type A)	HED = DPICM Anti-Personnel & Anti-Material Submunitions	PDD = Point Detonation Delay			X
	XRNGB = (Extended Range Type B)	HEI = ATICM Anti-Tank Submunitions	TI = Time Action		X	X
	XRNGC= (Extended Range Type C)	HER = Rocket Assisted	VT = Variable Time		X	X
		AML = Anti-Materiel Mine, Long Delay	VTD = Variable Time, Desensitized			X
		AMS = Anti-Materiel Mine, Short Delay	MRF = Multi-Role Fuze		X	
		APL = Anti-Personnel Mine, Long Delay	MRP = Multi-Role Fuze, Point Detonation			X
		APS = Anti-Personnel Mine, Short Delay	MRT = Multi-Role Fuze Time			X
		RP = Smoke Red Phosphorous	MRV = Multi-Role Fuze Variable Time			X
		WP = Smoke White Phosphorous	MRD = Multi-Role Fuze Delay			X
		ILL = Illuminating				
		SMK = Smoke				
203MM MLRS		HEA = High Explosive				
		JED = DPICM Anti-Personnel & Anti-Material Submunitions				
		JEE = ATCMS Anti-Material & Anti-Personnel				
		JEH = Reduced Range Practice Rocket				
		JEM = DEU/GBR Reduced Range Practice Rocket				
		JMT = Anti-Tank Mine				
		JTA = MLRS Terminally Guided Warhead				
		JTB = MLRS SADARM				
		JTC = ATCMS Brilliant Anti-Tank				
		JEL = Extended Range Rocket				
122MM MLRS		HEA = High Explosive	PD = Point Detonation		X	X
		HEB = Improved High Explosive[36]	PDD = Point Detonation Delay			X
		HEI = ATICM Anti-Tank Submunitions	MRD = Multi-Role Fuze Delay			X
		JMT = Anti-Tank Mine	TI = Time Action		X	X
			VT = Variable Time		X	X
140.5MM MLRS		HEA = High Explosive				
160MM MLRS		HEA = High Explosive	TI = Time Action		X	X

1. Fuze Codes to be used in AFU.AMS
2. Fuze Codes to be used in FM.CFF, FM.MTO, FM.SUB, NNFP.FP

[34] This includes Short Delay and Delay.
[35] For NLD this includes the practice round.
[36] This includes ball fragmented HE.

Table 22. Legal Entries for Fire Support Ammunition

TYPE TARGET	SUBTYPE/DOP	VOLLEYS[1]	EFFECTS[2]
Air Defence Artillery	All		X
Armour	All		X
Artillery	Light		X
	Medium		X
	Position		X
	All Others	X	
Assembly	All		X
Bridge	All	X	
Buildings	All	X	
Centre	All		X
Equipment	All		X
Mortars	Position		X
	Medium		X
	All Others	X	
Personnel	COVER and PROVER	X	
	All Other		X
Rocket/Missiles	All		X
Supply Dump	All	X	
Terrain	All	X	
Vehicles	All		X
Weapons	All	X	

1 Volleys targets shall not be converted to effects targets.

2 Effects targets may be converted to volleys targets.

NOTE: All non-personnel effects type targets with a Degree of Protection of COVER or PROVER are changed automatically to Personnel/Unknown with a Degree of Protection of COVER or PROVER and thus become volleys type targets.

Table 23. Attack Method for Target Type

TYPE	SUBTYPE	DEGREE OF PROTECTION	VULNERABILITY CATEGORY
ADA	All	Not Used	VEHEXP
ARMOR	All	Not Used	TNKMOD
ARTY	LT	Not Used	WHEART
ARTY	All except LT	Not Used	TNKMOD
ASSY	All	Not Used	VEHEXP
BLDG	All	Not Used	VEHEXP
BRIDGE	FPTON, VEHPON, WOOD	Not Used	BRISFT
BRIDGE	UNK, CONCR, STEEL, SITE	Not Used	BRIHRD
CEN	All	Not Used	VEHEXP
EQUIP	All	Not Used	VEHEXP
MORT	All	Not Used	WHEART
PERS	All	PRAND, PRONE	PEREXP
PERS	All	PRUG, DUGIN	PERFOX
PERS	All	PROVER, COVER	PEREAR
RKTMSL	All	Not Used	VEHEXP
SUPPLY	All	Not Used	SUPPLY
TER	All	Not Used	VEHEXP
VEH	HEL	Not Used	COPCGO
VEH	All except HEL	Not Used	VEHEXP
WPN	All	Not Used	WHEART

Table 24. Legal Entries for Target Type/Subtype Conversion to Vulnerability Category

CODE	DEFINITION
PEREXP	Casualties to Personnel in Open
PERTNK	Casualties to Personnel in Tanks
PERAPC	Casualties to Personnel in APCs
PERVEH	Casualties to Personnel in Wheeled Vehicles
PEREAR	Casualties to Personnel in Earth Shelters
PERFOX	Casualties to Personnel in Foxholes
VEHEXP	Moderate Damage to Exposed Wheeled Vehicles
VEHSLD	Moderate Damage to Shielded Wheeled Vehicles
WHEART	Moderate Damage to Towed Artillery
TNKMOD	Moderate Damage to Tanks, APCs, and SP Artillery
BRIHRD	Moderate Damage to Hard Fixed Bridges
BRISFT	Moderate Damage to Soft Fixed Bridges

SUPPLY	Severe Damage to Supply Depots
COPCGO	Severe Damage to Randomly Parked Cargo/Transportation Helicopters
COPOBS	Severe Damage to Randomly Parked Light Observation Helicopters

Table 25. Legal Entries for Vulnerability Categories

CODE	REASON	MSG TYPE	ACTION REQUIRED
1	Fire Mission is already active	FM.CFF	
2	Fire Mission is not active	FM.FMC FM.FMC FM.FMC FM.FMC FM.FMC FM.SUB FM.SUB	Fire Check Fire Cease Loading Cancel check fire Cancel cease loading Additional Fire End of mission
3	Fire Plan not active	FM.FMC FM.FMC FM.FMC FM.FMC	Check Fire Cease Loading Cancel check fire Cancel cease loading
4	Units not available	FM.CFF FM.FMC FM.FMC FM.FMC FM.SUB	 Fire Cancel check fire Cancel cease loading Additional Fire
5	No ammunition	FM.CFF FM.FMC FM.FMC FM.FMC FM.SUB	 Fire Cancel check fire Cancel cease loading Additional Fire
6	Units out of range	FM.CFF FM.SUB	 Additional Fire
7	Insufficient time	FM.CFF FM.SUB	 Additional Fire
8	Mission not at my command	FM.FMC	Fire
9	Check Fire / Cease Loading still in force	FM.CFF FM.FMC FM.SUB	 Fire Additional Fire
10	Check Fire / Cease Loading not in force	FM.FMC FM.FMC	Cancel check fire Cancel cease loading
11	Operator Denied	Any except FM.FMC for Check Fire and Cease Loading	
12	Non specific	Any	

Table 26 Legal Entries for Reason Codes for CANTCO

ENTRY	GREENWICH LONGITUDE	HEMISPHERE
0	0 degrees to 90 degrees W	Northern

1	90 degrees to 180 degrees W	Northern
2	180 degrees to 90 degrees E	Northern
3	90 degrees to 0 degrees E	Northern
4	NOT USED	
5	0 degrees to 90 degrees W	Southern
6	90 degrees to 180 degrees W	Southern
7	180 degrees to 90 degrees E	Southern
8	90 degrees to 0 degrees E	Southern
9	Used when area is not indicated by latitude and longitude.	

Table 27. Legal Entries for Global Octants

CODE	DEFINITION
000	Sky obscured by fog.
001-160	Visual estimate of base of lowest cloud in tens of meters.
166	Visual estimate is that base of lowest cloud is above sixteen hundred (1600) meters.
199	Sky clear.
301-460	Subtract three hundred (300) to obtain base of lowest cloud observed by searchlight or laser, in tens of meters.
466	Base of lowest cloud observed by searchlight or laser is above sixteen hundred (1600) meters.
477	Searchlight or laser observations unreliable.
499	No cloud detected by searchlight or laser.
501-660	Subtract five hundred (500) to obtain base of lowest cloud in which a balloon was lost, in tens of meters.
666	Balloon lost above sixteen hundred (1600) meters.
677	Balloon observation unreliable.

Table 28. Legal Entries for MET.TA Cloud Base Height

CODE	DEFINITION
FO	Forward Observer
FOWOL	FO Without Laser
OBSR	Observer Not Artillery
RECON	Long Range Reconnaissance Patrol
TGTB	Target Base
AOBSR	Air Observer
SORNG	Sound Ranging
FLRNG	Flash Ranging
CMRR	Counter Mortar Radar
CBRR	Counter Battery Radar
PI	Photo Interpretation
POW	Prisoner Of War
GSRA	Ground Surveillance Radar

SLAR	Side Looking Airborne Radar
IRAIR	Airborne Infrared
TACAIR	Tactical Air
COMINT	Communications Intelligence
ELINT	Electronic Intelligence
RPV	Remotely Piloted Vehicle

Table 29. Legal Entries for Target Acquisition Agency

CODE	TITLE	DEFINITION
AOI	Area of Interest (Named Area of Interest)	1. That area of concern to the commander, including the area of influence, areas adjacent thereto, and extending into enemy territory to the objectives of current or planned operations. This area also includes areas occupied by enemy forces, which could jeopardize the accomplishment of the mission. 2. A geographical area from which information and intelligence are required to execute successful tactical operations and to plan for future operations. It includes any threat forces or characteristics of the battlefield environment that will significantly influence accomplishment of the command's mission
BDRY	Boundary	A line which delineates surface areas for the purpose of facilitating coordination and deconfliction of operations between adjacent units, formations, or areas. 1. A control measure used to define the right, left, rear, and forward limits of an area of operation. 2. A control measure normally drawn along identifiable terrain features and used to delineate areas of tactical responsibility between adjacent units and between higher headquarters to the rear of subordinate units. Within their boundaries, units may maneuver within the overall plan without close coordination with neighboring units unless otherwise restricted. Direct fire may be placed across boundaries on clearly identified enemy targets without prior coordination, provided friendly forces are not endangered. Indirect fire also my be used after prior coordination.

CODE	TITLE	DEFINITION
CP	Checkpoint	1. A predetermined point on the surface of the earth used as a means of controlling movement, a registration target for fire adjustment, or reference for location. 2. Center of impact; a burst center. 3. Geographical location on land or water above which the position of an aircraft in flight may be determined by observation or by electrical means. 4. A place where military police check vehicular or pedestrian traffic in order to enforce circulation control measures and other laws, orders, and regulations. 5. Predetermined point on the ground used to control movement and tactical maneuver. 6. A place where military police are set up to provide information and prevent illegal actions or actions that aid the enemy; this include inspection of vehicles and cargo.
FEBA	Forward Edge of Battle Area	The foremost limits of a series of areas in which ground combat units are deployed, excluding the areas in which the covering or screening forces are operating, designated to coordinate fire support, the positioning of forces, or the maneuver of units.
FFA	Free Fire Area	A specific designated area into which any weapon system may fire with out additional coordination with the establishing headquarters. 1. The FFA is used to expedite fires and to facilitate the jettison of Close Air Support (CAS) munitions if aircraft are unable to use them on target. 2. The area is usually established by a supported division or higher commander following coordination with the host nation, if appropriate. The FFA is located on identifiable terrain when possible or by a grid reference if necessary.
FLOT	Forward Line of Own Troops	A line which indicates the most forward positions of friendly forces in any kind of military operation at a specific time. The FLOT normally identifies the forward location of covering and screening forces. The FLOT may be at, beyond, or short of the FEBA. An enemy FLOT indicates the forward most position of hostile forces.

CODE	TITLE	DEFINITION
FSCL	Fire Support Coordination Line	The FSCL is used to coordinate the fires of air, ground or sea weapon systems using any type of ammunition. Supporting weapons may not be used to produce effects on or to the rear of the line. Attacks behind this line must be coordinated with the appropriate ground force commander except those fires, which have been cleared by other measures, such as the No Fire Line (NFL) and require no further coordination. The FSCL should be as close to the forward elements as possible, consistent with the tactical situation and its evolution. Furthermore, it should be ease to define on a map and easily recognized from the ground and air.
LD	Line of Departure	1. In land warfare, a line designated to coordinate the departure of attack elements. 2. In amphibious warfare, a suitably marked offshore coordinating line to assist assault craft to land on designated beaches at schedule times.
MA	Mined Area	An area declared dangerous due to the presence or suspected presence of mines.
MFLD	Minefield	In land warfare, an area of ground containing mines laid with or without a pattern.
NFA	No-Fire Area	An area into which no fires or the effects of fires are allowed. 1. The purpose of a NFA is to prohibit all fires or their effects into an area without prior clearance. 2. Usually the NFA is established by a division or corps. 3. The NFA is located on identifiable terrain where possible, or by grid reference, or as a radius from a center point. 4. Exceptions. (a) When the establishing headquarters approves fires (temporarily) within the NFA on a mission by mission basis,.(b) When an enemy force within the NFA engages a friendly force, the commander may engage the enemy to defend his force.
PL	Phase Line	A line used for control and coordination of military operations, usually a terrain feature extending across the zone of action. It is usually along a recognizable terrain feature extending across the sector or zone of action. Units normally report crossing PLs, but do not halt unless specifically directed.

CODE	TITLE	DEFINITION
RFA	Restricted Fire Area	An area in which specific restrictions are imposed and into which fires that exceed those restrictions may not be delivered without coordination with the establishing headquarters. 1. The purpose of an RFA is to regulate fires into an area according to stated restrictions. 2. The RFA is established by the maneuver battalion or larger ground forces or by an independently operating company. 3. The RFA is usually located on identifiable terrain; by grid reference, or a radius (in meters) from a center point.
RFL	Restrictive Fire Line	A line established between converging friendly forces (one or both may be moving) that prohibits all fires or effects from fires across the line without coordination with the affected force. 1. The purpose of the RFL is to prevent interference between converging friendly forces. 2. The RFL is established by the next higher commanders of the converging forces. 3. This line is placed on identifiable terrain - usually closer to the stationary force.
RP	Release Point	1. In road movements, a well-defined point on a route at which the elements composing a column return under the authority of their respective commanders, each one of these elements continuing it movement towards its own appropriate destination. 2. In air transport, a point on the ground directly above which the first paratroop or cargo item is airdropped.
SP	Start Point	A well-defined point on a route at which a movement of vehicles begins to be under the control of the commander of this movement. It is at this point that the column is formed by the successive passing, at the appointed time, of each of the elements composing the column. In addition to the principal start point of a column there may be secondary start points for its different elements.
TAI	Target Area of Interest	The geographical area or point along a mobility corridor where successful interdiction will cause the enemy to either abandon a particular course of action or require him to use specialized engineer support to continue, where he can be acquired and engaged by friendly forces.
TAREA	Target Area	An area consisting of high value targets.

CODE	TITLE	DEFINITION
ZOF	Zone of Fire	A maneuver control measure usually utilized during amphibious operations that is an area within which designated ground fire support units and naval gunfire support ships deliver, or are prepared to deliver, fire support. Fire may be observed or unobserved. The zone of fire is used to coordinate the efforts of the fire support ships and unit with each other and with the ground scheme of maneuver. The size and location of a zone of fire is based on the ground force boundaries, the area in which the supporting ships and units can provide effective fire; visibility; range of the ship's guns; and the height of intervening terrain.

Table 30. Legal Entries for Battlefield Geometry

MESSAGE TITLE	MSG TYPE IDENTIFIER	SERVICE CHARACTER	PRIORITY	SECURITY CLASS
AMMUNITION FIRE UNIT				
Ammunition Status	AFU.AMS	STX	4	NC
Deployment Command	AFU.DCMD	STX	4	NS
Fire Unit Status	AFU.FUS	STX	4	NC
ARTILLERY TARGET INTELLIGENCE				
Artillery Target Report	ATI.ATR	STX	4	NC
Target Information Request	ATI.TIR	STX	5	NC
FIRE MISSION				
Call for Fire	FM.CFF	DC4	2	NU
Fire Mission Command	FM.FMC	DC3 (Check Fire) or DC4 (other)	1 (Check Fire) or 2 (other)	NU
Message to Observer	FM.MTO	DC4	2	NU
Subsequent Adjustment	FM.SUB	DC4	2	NU
METEOROLOGICAL				
Computer	MET.CM	STX	4	NU
Request for MET Support	MET.RFM	STX	5	NU
Target Acquisition	MET.TA	STX	4	NU
NON-NUCLEAR FIRE PLANNING				
Compute a Fire Plan	NNFP.COMFP	STX	3	NC
Fire Plan	NNFP.FP	STX	3	NS
SUPPORT				
Air Space Coordination Area	SPRT.ACA	STX	4	NS
Battlefield Geometry	SPRT.GEOM	STX	4	NC
SYSTEM				
Request for Report	SYS.RFR	STX	5	NU
Reply or Remarks Message	SYS.RRM	STX	2-6	NU to NS

Table 31. Priority and Security Classification by Message Type

CODE	DEFINITION

ASCH	As Changed
BIWEEKLY	Biweekly
DAILY	Daily
EIGHTHR	Every Eight (8) Hours
FOURHR	Every Four (4) Hours
HOURLY	Hourly
MONTHLY	Monthly
ONCE	Once
SIXHR	Every Six (6) Hours
TWELVEHR	Every Twelve (12) Hours
TWOHR	Every Two (2) Hours
WEEKLY	Weekly

Table 32. Legal Entries for Report Frequency

SET	MESSAGES				
ARE2	SPRT.GEOM				
ATH	SPRT.GEOM				
AZF	AFU.DCMD	AFU.FUS			
BDY2	SPRT.GEOM				
BGEOM	SPRT.GEOM	SYS.RFR			
CBMRI	MET.TA				
CIR	ATI.TIR	SPRT.GEOM			
CMD	FM.FMC				
DCM37	MET.CM				
DSIZ	ATI.TIR				
DSTR	ATI.TIR				
DTA18	MET.TA				
DTG	AFU.AMS MOD.ATTACK	AFU.FUS MOD.XCLUDE	ATI.ATR SYS.RFR	ATI.TIR	FM.FMC
DUR	SPRT.ACA	SPRT.GEOM			
EFR	FM.CFF	MOD.ATTACK	NNFP.FP		
EOM	FM.CFF	FM.FMC	FM.SUB		
FIRINT	FM.CFF	FM.SUB			
FPN	AFU.AMS	AFU.FUS SPRT.ACA	FM.FMC SPRT.GEOM	NNFP.COMFP SYS.RFR	NNFP.FP
FPTIME	NNFP.COMFP				
FSP	AFU.DCMD	AFU.FUS			
FUMSN	AFU.DCMD	AFU.FUS			
FUZE5	NNFP.FP				
FZE6	AFU.AMS				
GPA	MET.RFM				
GPB	MET.RFM				
GPC	MET.RFM				
GPD	MET.RFM				
GRID	AFU.FUS NNFP.FP	ATI.ATR	FM.CFF	FM.SUB	NNFP.COMFP
GRP	NNFP.FP				
GZE	AFU.DCMD NNFP.FP	AFU.FUS SPRT.ACA	ATI.ATR SPRT.GEOM	FM.CFF	FM.SUB
GZE2	ATI.TIR				
HHOUR	NNFP.COMFP				
LEGA	SPRT.ACA				
LEGB	SPRT.ACA				

SET	MESSAGES				
LEGC	SPRT.ACA				
LEGD	SPRT.ACA				
LEGE	SPRT.ACA				
LEGF	SPRT.ACA				
LEGG	SPRT.ACA				
LEGH	SPRT.ACA				
LSNDTG	AFU.DCMD				
LSNLOC	AFU.DCMD				
MAX5	AFU.FUS				
MIN	AFU.FUS				
MOC	FM.CFF	FM.MTO	FM.SUB		
MSGID	AFU.AMS	AFU.DCMD	AFU.FUS	ATI.ATR	ATI.TIR
	FM.CFF	FM.FMC	FM.MTO	FM.SUB	MET.CM
	MET.RFM	MET.TA	NNFP.COMFP	NNFP.FP	SPRT.ACA
	SPRT.GEOM	SYS.RFR	SYS.RRM		
MSTA	MET.CM	MET.TA			
MUE2	FM.CFF	FM.MTO	FM.SUB		
MVTIM	AFU.DCMD				
NAME	SPRT.ACA				
NRS	AFU.FUS				
NUN	FM.CFF	FM.MTO			
OPT	AFU.AMS	AFU.DCMD	AFU.FUS	ATI.ATR	ATI.TIR
	NNFP.COMFP	NNFP.FP	SPRT.ACA	SPRT.GEOM	SYS.RFR
ORDNAM	AFU.DCMD				
PERM	ATI.ATR				
PNT9	AFU.DCMD	SPRT.GEOM			
PRI	NNFP.FP				
PRJ6	AFU.AMS	NNFP.COMFP			
PRP3	AFU.AMS				
REF	SYS.RRM				
REL	ATI.TIR				
REPLY	SYS.RRM				
RHR	NNFP.FP				
RMKS	SYS.RRM				
ROB	FM.FMC				
ROF	AFU.FUS				
RQMT	SYS.RFR				
RVA	FM.CFF	NNFP.FP			
SHL5	NNFP.FP				
SIZ	ATI.ATR	FM.CFF	NNFP.FP		
SLOC	ATI.TIR				
SMD	FM.MTO				
SNO	ATI.TIR				
SRMK	AFU.DCMD	ATI.ATR			
STR	ATI.ATR	FM.CFF	NNFP.FP		
SUR	ATI.ATR	FM.SUB			
TAC	ATI.ATR				
TGINST	FM.FMC	NNFP.FP			
TIRL	ATI.ATR	ATI.TIR			
TLD	NNFP.FP	SYS.RFR			
TNO	ATI.ATR	ATI.TIR	FM.CFF	FM.FMC	FM.MTO
	FM.SUB	NNFP.FP			
TRJ	FM.CFF	FM.MTO	FM.SUB		
TRJ5	NNFP.FP				
TRL	AFU.FUS				
TSI	ATI.ATR	ATI.TIR			

SET	MESSAGES			
TST	ATI.TIR	FM.CFF	NNFP.FP	
UNR	AFU.DCMD	AFU.FUS		
UNT	AFU.AMS	AFU.DCMD	AFU.FUS	SYS.RFR
UNT5	NNFP.FP			
URT	AFU.FUS			
UST	AFU.FUS			
VOL	MOD.ATTACK			
VOLS5	NNFP.FP			
WPN	AFU.FUS			
WPN3	NNFP.COMFP			

Table 33. Sets in Messages

FIELD TITLE	SET ID		
ACA Name	NAME		
Altitude	GRID		
Ammunition Restricted	ARE		
Angle T	SMD		
Area of Interest	GPB		
Attitude	SIZ		
Azimuth of Fire	AZF		
Battalion/Regiment	FSP	UNR	UNT
Battery/Company	FSP	UNT	
Boundary Name	BDY		
Cloud Angle/Height	CBMRI		
Confirmed Target	TSI		
Date-Time Effective From	DUR	RQMT	
Date-Time Effective To	DUR	RQMT	
Date-Time Group	DTG		
Date-Time Movement to End	MVTIM		
Date-Time Movement to Start	MVTIM		
Date-Time of Liaison	LSNDTG		
Date-Time of Mission Assignment	MSNDTG		
Date-Time of Mission Termination	MSNDTG		
Date-Time of Reference	REF		
Date-Time Return to Action	UST		
Degree of Protection	TST		
Duration	FIRINT		
Duration of Fire	RHR		
Duration of Time Window	MOC		
Effects Required	EFR		
End of Mission Indicator	EOM		
Establishing Authority	ATH		
Estimated Start Time	FPTIME		
Estimated Stop Time	FPTIME		
Evaluation Reliability	REL		
Evaluation Reliability	TAC		
Fire For Effect Fuze	MUE		
Fire For Effect Projectile	MUE		
Fire Mission Command	CMD		
Fire Plan H-Hour	HHOUR		
Fire Plan Name	FPN		
Fire Unit Status	UST		
First Selected Fuze	FUZE		
First Selected Projectile	SHL		

FIELD TITLE	SET ID			
Fuze Type	FZE			
Geometry Type	BGEOM			
Geometry Type Name	BGEOM			
Global Octant	MSTA			
Grid Zone	GRID	GZE	LSNLOC	SLOC
Interval Between Volleys	FIRINT			
Left Traverse Limit	TRL			
Length	SIZ			
Location Accuracy	TAC			
Lower Length Limit	DSIZ			
Lower Strength Limit	DSTR			
Lower Width Limit	DSIZ			
Maximum Altitude	LEGA			
Maximum Range	MAX			
Maximum Rate of Fire	ROF			
Maximum Volleys	VOL			
Mean Refractive Index	CBMRI			
Message Reply Code	REPLY			
Message Type	MSGID	REF		
MET Air Temperature/Humidity	DTA			
MET Air Temperature/Pressure	DCM			
MET Data Limits	GPD			
MET Station Height/Pressure	MSTA			
MET Station Location	MSTA			
MET Support Timing	GPC			
MET Type/Global Octant	GPA			
MET Validity	MSTA			
MET Wind Direction/Speed	DCM	DTA		
MET.CM Zone Code	DCM			
MET.TA Zone Code	DTA			
Method of Control	MOC			
Minimum Altitude	LEGA LEGE	LEGB LEGF	LEGC LEGG	LEGD
Minimum Range	MIN			
Mission Fired	TSI			
Name of Area of Validity	AREAM			
Nuclear Category	NRS			
Number of Casualties	SUR			
Number of Fuzes	FZE			
Number of Guns	NUN			
Number of Projectiles	PRJ			
Number of Propellants	PRP			
Number of Target Elements	STR			
Number of Volleys/Rockets	MUE			
Number of Weapons	WPN			
Order Name	ORDNAM			
Originator	MSGID	REF		
Plain Text	RMKS	SRMK		
Platoon	UNT			
Point Sequence Number	PNT			
Primary Option	OPT			
Projectile Type	PRJ			
Propellant Type	PRP			
Radiation Exposure Status	NRS			
Radius	CIR			

FIELD TITLE	SET ID			
Range Limitation Indicator	MAX			
Range Probable Error	SMD			
Reason Code	ROB			
Regiment/Brigade/ Division	FSP	UNR	UNT	
Report Accuracy	RVA			
Report Frequency	RQMT			
Report To Observer	ROB			
Report Type	RQMT			
Request Category	TIRL			
Request Number	SNO			
Response Level	TIRL			
Response Time	URT			
Right Traverse Limit	TRL			
Search Zone Width	SLOC			
Second Selected Fuze	FUZE			
Second Selected Projectile	SHL			
Secondary Option	OPT			
Section	UNT			
Sustained Rate of Fire	ROF			
Tactical Fire Unit Mission	FUMSN			
Target Acquisition Agency	TAC			
Target Disposition	SUR			
Target Group Name	GRP			
Target Instance	TGINST			
Target List Designator	TLD			
Target Number	TNO			
Target Permanence	PERM			
Target Priority	PRI			
Target Subtype	TST			
Target Type	TST			
Time	MOC			
Time of Flight	SMD			
Time Relative to H-Hour	RHR			
Trajectory Type	TRJ			
Upper Length Limit	DSIZ			
Upper Strength Limit	DSTR			
Upper Width Limit	DSIZ			
UTM Easting	CIR LEGC LEGG SLOC	GRID LEGD LEGH	LEGA LEGE LSNLOC	LEGB LEGF PNT
UTM Northing	CIR LEGC LEGG SLOC	GRID LEGD LEGH	LEGA LEGE LSNLOC	LEGB LEGF PNT
Volleys First Projectile/Fuze	VOLS			
Volleys Second Projectile/Fuze	VOLS			
Weapon Model Number	WPN			
Weapon Type	WPN			
Width	LEGA LEGE	LEGB LEGF	LEGC LEGG	LEGD SIZ
Zone of Fire	FUMSN			

Table 34. Field Titles in Sets

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PART 3 - VOICE TEMPLATES

1. Introduction

1.1 Purpose

1.1.1 The Voice Templates (VT) contained in this chapter are intended for use when a data link is not available to send a formatted message. They will serve as a convenient medium for ensuring the integrity of a message during its transfer from manual to data systems. The VT will also act as an aid to understanding the structure of a formatted message.

1.2 Objective

1.2.1 The object of using a VT is to ensure that the information required to be sent in any particular message is structured in the same pre-determined order whether it is transmitted over a voice or data circuit. This is essential to ensure consistency in the use of each message, whatever its means of transmission, and to reduce the risk of ambiguity, misunderstanding or omission of essential detail.

1.3 Approach

1.3.1 The following approach has been adopted in the development of the templates:

Presentation - Overall presentation is to be as user friendly as possible, with main emphasis being given to the need for brevity, clarity and consistency.

Content - The message content table of each template is to follow the same structure and level of detail for the presentation of information used in its associated Information Exchange Requirement (IER). This reliance on a common structure for the presentation of information is an important factor to ensure the cooperation, between Data Messages and VTs.

Use as a Field Manual - VTs are designed to be usable as a field manual in multinational environment. Nations can use it alternatively or may prefer to use extracts from it to meet their own specific requirements for its national use only.

Repetition of Sets – No attempt has been made to demonstrate how sets might be repeated in the messages. For example in the AFU.AMS message on the following page, the projectiles (Set F) could have been repeated up to 6 times but this is not shown.

1.4 Presentation.

The following shading convention has been used in the tables to indicate if information has to be included or not:

Mandatory	M
Optional	O
Conditional	C

2. AFU.AMS

Ser	Field Title		OCC	Field length	Examples
A	MESSAGE IDENTIFICATION		M		
	1	Message type	M	7X	AFU.AMS
	2	Originator	M	13X	1.1.1.AAA.BBB
B	1	Primary Option	M	3A	XMT
C	Fire Unit		M		
	1	Section/team	O	1ANB	
	2	Platoon	O	1ANB	
	3	Battery/Company	M	1ANB	3
	4	Battalion/Regiment	M	1-3ANB	16
	5	Regiment/Brigade/Division	M	1-3ANB	120
D	1	Data-time group (DDHHMM)	M	6N	312359
E	1	FIRE PLANE NAME	O	1-6AN	LOANNA
F	PROJECTILES		C		
	1	Projectile type	M	3X	HEA
	2	Number of projectiles	M	1-4N	15
G	PROPELLANTS		C		
	1	Propellant type	M	5A	XRNGA
	2	Number of propellants	M	1-4N	15
H	FUZES		C		
	1	Fuze Type	M	2-4A	PDD
	2	Number of fuzes	M	1-4N	15

3. AFU.DCMD

Ser	Field Title		OCC	Field length	Examples
A	MESSAGE IDENTIFICATION		M		
	1	Message type	M	8X	AFU.DCMD
	2	Originator	M	13X	1.1.1.AAA.BBB
B	1	OPTION	M	3A	XMT
C	1	ORDER NAME	M	1-6ANB	ORDER1
D	FIRE UNIT		C		
	1	Section/Team	O	1ANB	1
	2	Platoon	O	1ANB	5
	3	Battery/Company	O	1ANB	1
	4	Battalion/Regiment	M	1-3ANB	AAA
	5	Regiment/Brigade/Division	M	1-3ANB	BBB
E	LIAISON LOCATION		C		
	1	UTM Easting	M	6N	053721
	2	UTM Northing	M	1-8N	1656023
	3	Grid Zone	M	1-3NS	+35
F	1	LIAISON TIME	C	6N	312359
G	TACTICAL FIRE UNIT MISSION		O		
	1	Tactical Fire Unit Mission	M	1-3A	GSR
	2	Zone of Fire	O	1-6AN	KM156
H	MISSION TIME		C		
	1	Date-Time of Mission Assignment	M	6N	021030
	2	Date-Time of Mission Termination	O	6N	040915
I	MANEUVER UNIT SUPPORTED		O		
	1	Battery/Company	O	1ANB	1
	2	Battalion/Regiment	O	1-3ANB	D
	3	Regiment/Brigade/Division	M	1-3ANB	E
J	ARTILLERY UNIT REINFORCED:		O		
	1	Battalion/Regiment	O	1-3ANB	F
	2	Regiment/Brigade/Division	M	1-3ANB	R
K	MOVE LOCATION OR ROUTE:		O		
	1	Point Sequence Number	M	1-2N	1
	2	UTM Easting	M	6N	054579
	3	UTM Northing	M	1-8N	1656533

4. AFU.FUS

Ser	Field Title		OCC	Field length	Examples
A	MESSAGE IDENTIFICATION		M		
	1	Message type	M	7X	AFU.FUS
	2	Originator	M	13X	1.1.1.AAA.BBB
B	1	Option	M	3A	XMT
C	Fire Unit		M		
	1	Section/team	O	1ANB	1
	2	Platoon	O	1ANB	5
	3	Battery/Company	M	1ANB	1
	4	Battalion/Regiment	M	1-3ANB	AAA
	5	Regiment/Brigade/Division	M	1-3ANB	BBB
D	1	Data-time group	M	6N	312359
E	1	FIRE PLANE NAME	O	1-6AN	LOANNA
F	UNIT STATUS		C		
	1	Fire Unit Status	M	3A	RDY
	2	Date-Time Return to Action	C	6N	
G	FIRE UNIT WEAPONS		C		
	1	Number of Weapons	M	1-2N	18
	2	Weapon Type	M	4-6X	155MM
	3	Weapon Model Number	M	2-6AN	M109A4
H	1	MISSION RESPONSE TIME	O	1-2N	5
I	UNIT LOCATION		O		
	1	UTM Easting	M	6N	016744
	2	UTM Northing	M	1-8N	1656035
	3	Altitude	M	1-5NS	100
J	1	GRID ZONE	C	1-3NS	30
K	1	AZIMUTH OF FIRE	C	4N	2800
L	1	MINIMUM RANGE in meters	O	1-4N	3500
M	MAXIMUM RANGE		C		
	1	Range Limitation Indicator	M	1N	2
	2	Maximum Range in meters	M	1-6N	40000
N	RATE OF FIRE		O		
	1	Maximum Rate of Fire	O	4NS	02.5
	2	Sustained Rate of Fire	O	4NS	01.0
O	TRAVERSE LIMITS		C		
	1	Left Traverse Limit	M	4N	2100
	2	Right Traverse Limit	M	4N	3510

5. ATI.ATR

Ser	Field Title		OCC	Field length	Examples
A	MESSAGE IDENTIFICATION		M		
	1	Message type	M	7X	ATI.ATR
	2	Originator	M	13X	1.1.1.AAA.BBB
B	1	OPTION	M	3A	XMT
C	1	TARGET NUMBER	M	6AN	AB1002
D	1	DATE-TIME Group	O	6N	021500
E	TARGET LOCATION		O		
	1	UTM Easting	M	6N	053010
	2	UTM Northing	M	1-8N	1657230
	3	Altitude	M	1-5NS	150
F	1	GRID ZONE	C	1-3NS	35
G	TARGET DESCRIPTION		C		
	1	Target Type	M	3-6A	PERS
	2	Target Subtype	M	2-6A	UNK
	3	Degree of Protection	C	4-6A	PRONE
H	1	TARGET STRENGTH/Number of Target Elements	O	1-4 N	7
I	TARGET SIZE		O		
	1	Length or radius	M	1-4N	100
	2	Width	C	1-4N	50
	3	Attitude	O	4N	0600
J	TARGET ACQUISITION		C		
	1	Target Acquisition Agency	M	2-6A	RECON
	2	Location Accuracy	C	1-3N	50
	3	Evaluation Reliability	C	1A	B
K	1	TARGET PERMANENCE	O	4N	0040

6. ATI.TIR

Ser		Field Title	OCC	Field length	Examples
A		MESSAGE ID	M		
	1	Message Type	M	7X	ATI.TIR
	2	Originator	M	13X	1.1.1.AAA.BBB
B		TGT INFO REQUEST LEVEL	M		
	1	Arty request/query category	M	3A	ATQ
	2	Tgt Info Request response level	C	1N	2
C	1	OPTION	M	3A	XMT
D	1	DATE-TIME GROUP	C	6N	030900
E	1	TARGET NUMBER	C	6AN	-
F	1	STANDING REQUEST FOR INFORMATION NUMBER	C	1N	-
G		RECTANGULAR SEARCH AREA	C		
	1	UTM Easting	M	6N	052954
	2	UTM Northing	M	1-8N	1656856
	3	UTM Easting	M	6N	052935
	4	UTM Northing	M	1-8N	1657022
	5	Search Zone Width	M	2-4N	2000
H		CIRCULAR SEARCH AREA	C		
	1	UTM Easting	M	6N	-
	2	UTM Northing	M	1-8N	-
	3	Radius	M	2-4N	-
I	1	GRID ZONE	C	1-3NS	35
J		TARGET DESCRIPTION	C		
	1	Target Type	M	3-6A	ARTY
	2	Target Subtype	O	2-6A	MDM
	3	Degree of Protection	C	4-6A	_
K		TARGET SIZE	C		
	1	Lower Length/radius Limit	M	2-4N	50
	2	Upper Length/radius Limit	M	2-4N	150
	3	Lower Width Limit	C	2-4N	50
	4	Upper Width Limit	C	2-4N	100
L		TARGET STRENGTH	C		
	1	Lower Strength Limit	M	1-4N	3
	2	Upper Strength Limit	M	1-4N	9999
M		MISSION FIRED INDICATOR	O		
	1	Mission Fired Indicator	O	3A	-
	2	Target Confirmation Status	O	3A	CFM
N	1	TARGET SEARCH RELIABILITY	O	1A	B

7. FM.CFF

Ser	Field Title		OCC	Field length	Examples
A	MESSAGE IDENTIFICATION		M		
	1	Message type	M	7X	FM.CFF
	2	Originator	M	13X	1.1.1.AAA.BBB
B	1	TARGET Number	M	6AN	AZ1234
C	1	NUMBER OF WEAPONS	C	1-2N	4
D	TARGET LOCATION		M		
	1	UTM Easting (in meters)	M	6N	056150
	2	UTM Northing (in meters)	M	1-8N	1613240
	3	Altitude (in meters)	M	1-5NS	123
E	1	TARGET GRID ZONE	M	1-3NS	+33
F	TARGET DESCRIPTION		M		
	1	Target type	M	3-6A	ADA
	2	Target subtype	M	2-6A	MDM
	3	Degree of Protection	C	4-6A	_
G	1	TARGET STRENGTH	M	1-4N	2
H	TARGET SIZE:		M		
	1	Length or radius (in meters)	M	1-4 N	300
	2	Width (in meters)	O	1-4N	200
	3	Attitude - azimuth of the longest axis (in mils)	C	4N	123
I	1	REPORT VALUE ACCURACY	O	1-3N	50
J	1	TRAJECTORY TYPE	O	3-4A	HIGH
K	MUNITIONS IN EFFECTS:		O		
	1	Number of volleys/rocket	C	1-2N	26
	2	Fire for effect projectile	O	3A	HEA
	3	Fire for effect fuze	C	2-4A	PD
L	1	Effects required (as %)	C	1-2N	_
M	METHOD OF CONTROL:		M		
	1	Method of control	M	2-3A	TOT
	2	Time	C	4N	0927
	3	Duration of time window	C	3N	_
N	FIRING INTERVAL:		C		
	1	Interval between volleys (in seconds)	M	1-3N	15
	2	Duration (in minutes)	C	1-3N	_
O	1	END OF MISSION	C	1A	Y

8. FM.FMC

Ser	Field Title		OCC	Field length	Examples
A	MESSAGE IDENTIFICATION		M		
	1	Message type	M	6X	FM.FMC
	2	Originator	M	13X	1.1.1.AAA.BBB
B	1	FIRE MISSION COMMAND	C	4-6A	CKFIRE
C	1	DATE-TIME GROUP	C	6N	170917
D	1	FIRE PLAN NAME	C	1-6AN	LOANNA
E	1	TARGET NUMBER	C	6AN	VA8845
F	1	TARGET INSTANCE	O	1-2N	3
G	OBSERVER REPORT		C		
	1	Report To Observer	M	4-6A	_
	2	Reason Code	C	1-2N	
H	1	End of Mission Indicator	C	1A	_

9. FM.MTO

Ser	Field Title		OCC	Field length	Examples
A	MESSAGE IDENTIFICATION		M		
	1	Message type	M	6X	FM.MTO
	2	Originator	M	13X	1.1.1.AAA.BBB
B	1	TARGET Number	M	6AN	VB2345
C	1	Number of Weapons/Guns	C	1-2N	18
D	MUNITIONS IN EFFECT		M		
	1	Number of Volleys/Rockets	M	1-2N	36
	2	Fire For Effect Projectile	M		HEA
	3	Fire For Effect Fuze	C		PDD
E	1	TRAJECTORY TYPE	O	3-4A	LOW
F	METHOD OF CONTROL		M		
	1	Method of Control	M	2-3A	WR
	2	Time	C		
G	OBSERVER DATA		O		
	1	Time of Flight	O	3-5NS	37.2
	2	Range Probable Error	O		50
	3	Angle T	O		2510

10. FM.SUB

Ser		Field Title	OCC	Field length	Examples
A		MESSAGE IDENTIFICATION	M		
	1	Message type	M	6X	FM.SUB
	2	Originator	M	13X	1.1.1.AAA.BBB
B	1	TARGET Number	M	6AN	VB1234
C	1	TRAJECTORY TYPE	O	3-4A	HIGH
D		MUNITIONS IN EFFECT	O		
	1	Number of Volleys/Rockets	O	1-2N	6
	2	Fire For Effect Projectile	O	3A	HEA
	3	Fire For Effect Fuze	C	2-4A	PD
E		TARGET LOCATION	C		
	1	UTM Easting	M	6N	167321
	2	UTM Northing	M	1-8N	2765518
	3	Altitude	M	1-5NS	85
F	1	GRID ZONE	C	1-3NS	30
G		METHOD OF CONTROL	O		
	1	Method of Control	M	2-3A	AMC
	2	Time	C	4N	
H		FIRING INTERVAL	O		
	1	Interval Between Volleys	M	1-3N	30
	2	Duration	C	1-3N	_
I	1	End of Mission Indicator	C	1A	_
J		SURVEILLANCE	O		
	1	Target Disposition	O	3-4A	
	2	Number of Casualties	C	1-4N	_

11. MET.CM

Ser	Field Title		OCC	Field length	Examples
A	MESSAGE IDENTIFICATION		M		
	1	Message type	M	6X	MET.CM
	2	Originator	M	13X	1.1.1.AAA.BBB
B	MET STATION DATA		M		
	1	Global Octant	M	1N	0
	2	MET Station Location	M	6AN	173642
	3	MET Validity	M	6N	310912
	4	MET Station Height/Pressure	M	6N	085685
C	MET DATA		M		
	1	MET.CM Zone Code	M	2N	00
	2	MET Wind Direction/Speed	M	6N	015010
	3	MET Air Temperature/Pressure	M	8N	03500850

12. MET.RFM

Ser	Field Title		OCC	Field length	Examples
A	MESSAGE IDENTIFICATION		M		
	1	Message type	M	7X	MET.RFM
	2	Originator	M	13X	1.1.1.AAA.BBB
B	1	MET Type/Global Octant	M	6AN	METR70
C	1	MET AREA/ Area of Interest	M	6AN	042
D	1	MET TIMING/ Support Timing	M	6N	161602
E	1	MET LINE NUMBERS/ MET Data Limits	M	6N	103015

13. MET.TA

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Ser	Field Title		OCC	Field length	Examples
A	MESSAGE IDENTIFICATION		M		
	1	Message type	M	6X	MET.TA
	2	Originator	M	13X	1.1.1.AAA.BBB
B	MET STATION DATA		M		
	1	Global Octant	M	1N	3
	2	MET Station Location	M	6AN	123345
	3	MET Validity	M	6N	150850
	4	MET Station Height/Pressure	M	6N	035980
C	CLOUD DATA		M		
	1	Cloud Base Height	M	3N	199
	2	Mean Refractive Index	O	3N	-
D	MET DATA		M		
	1	MET.TA Zone Code	M	2N	00
	2	MET Wind Direction/Speed	M	6N	356010
	3	MET Air Temperature/Humidity	M	6N	278280

14. NNFP.COMFP

Ser	Field Title		OCC	Field length	Examples
A	MESSAGE IDENTIFICATION		M		
	1	Message type	M	10X	NNFP.COMFP
	2	Originator	M	13X	1.1.1.AAA.BBB
B	1	OPTION	M	3A	XMT
C	1	FIRE PLAN NAME	M	1-6AN	LOANNA
D	CENTER OF TARGET AREA		O		
	1	UTM Easting	M	6N	052018
	2	UTM Northing	M	1-8N	1656726
	3	Altitude	O	1-5NS	70
E	1	GRID ZONE	C	1-3NS	35
F	1	H-HOUR	O	4N	2312
G	FIRE UNIT WEAPONS		O		
	1	Number of Weapons	M	1-2N	12
	2	Weapon Type	M	4-6X	155MM
	3	Weapon Model Number	O	2-6AN	M109A2
H	PROJECTILES		O		
	1	Projectile Type	M	3X	HED
	2	Number of Projectiles	M	1-4N	36
I	ESTIMATED FIRE PLAN TIME		O		
	1	Estimated DTG of Start	M	6N	311145
	2	Estimated DTG of Stop	M	6N	311245

15. NNFP.FP

Q	1	TRAJECTORY Type	C	3-4A	LOW
R	VOLLEYS		C		
	1	Volleys First Projectile/Fuze	M	1-2N	
	2	Volleys Second Projectile/Fuze	O	1-2N	
S	EFFECTS REQUIRED (in %)		C	1-2N	30
T	PROJECTILES		C		
	1	First Selected Projectile	M	3A	
	2	Second Selected Projectile	O	3A	
U	FUZES		C		
	1	First Selected Fuze	M	2-4A	
	2	Second Selected Fuze	O	2-4A	
E	1	TARGET INSTANCE	O	1-2N	
F	TARGET LOCATION		O		
	1	UTM Easting (in meters)	M	6N	056150
	2	UTM Northing (in meters)	M	1-8N	013240
	3	Altitude (in meters)	M	1-5NS	123
G	1	TARGET GRID ZONE	C	1-3NS	+33
H	TARGET DESCRIPTION		O		
	1	Target type	M	3-6A	ADA
	2	Target subtype	M	2-6A	MDM
	3	Degree of Protection	C	4-6A	_
I	1	TARGET STRENGTH (Number of Target Elements)	O	1-4N	2
J	1	REPORT VALUE ACCURACY	O	1-3N	
K	TARGET SIZE:		O		
	1	Length or radius (in meters)	M	1-4 N	300
	2	Width (in meters)	O	1-4N	200
	3	Attitude - azimuth of the longest axis (in mils)	C	4N	0123
L	H-HOUR TIME		C		
	1	Time Relative to H-Hour	M	1-4NS	-5
	2	Duration of Fire	O	1-2N	5
M	1	TARGET PRIORITY	O	1N	1
N	1	TARGET GROUP NAME	O	1-6AN	
O	1	TARGET LIST DESIGNATOR	O	3A	TIS
P	FIRE UNIT		C		
	1	Section	O	1ANB	
	2	Platoon	O	1ANB	
	3	Battery/Company	M	1ANB	1
	4	Battalion/Regiment	M	1-3ANB	AAA
	5	Regiment/Brigade/Division	M	1-3ANB	BBB

16. SPRT.ACA

Field	Title			Examples
K	MESSAGE IDENTIFICATION	M	8X	SPRT.ACA
	1 Message type	M	4X	1.1.1.AAA.BBB
	2 Originator	M	13X	XMT
	3 OPTION	M	3A	
L	LEG F	C		
	1 ACA NAME	M	1-6AN	3DCOR
	1 UTM Easting	M	6N	
	2 UTM Northing	M	1-8N	
	3 Width	M	1-4N	312359
	4 Minimum Altitude	M	1-5NS	
	5 Maximum Altitude	M	1-5NS	+31
M	LEG G	O		
	1 UTM Easting	M	6N	123456
	2 UTM Northing	M	1-8N	123456
	3 Width	M	1-4N	2000
	4 Minimum Altitude	M	1-5NS	3000
	5 Maximum Altitude	M	1-5NS	5000
N	LEG H	O		
	1 UTM Easting	M	6N	654321
	2 UTM Northing	M	1-8N	123456
	3 Width	M	1-4N	
	4 Minimum Altitude	M	1-5NS	
	5 Maximum Altitude	M	1-5NS	
I	LEG C	C		
	1 UTM Easting	M	6N	
	2 UTM Northing	M	1-8N	
	3 Width	M	1-4N	
	4 Minimum Altitude	M	1-5NS	
	5 Maximum Altitude	M	1-5NS	
J	LEG D	C		
	1 UTM Easting	M	6N	
	2 UTM Northing	M	1-8N	
	3 Width	M	1-4N	
	4 Minimum Altitude	M	1-5NS	
	5 Maximum Altitude	M	1-5NS	

17. SPRT.GEOM

Ser	Field Title		OCC	Field length	Examples
A	MESSAGE IDENTIFICATION		M		
	1	Message type	M	9X	SPRT.GEOM
	2	Originator	M	13X	1.1.1.AAA.BBB
B	OPTION		M		
	1	Primary Option	M	3A	XMT
	2	Secondary Option	C	3A	APT
C	GEOMETRY DURATION		C		
		Date-Time Effective From	M	6N	312359
		Date-Time Effective To	C	6N	
D	BATTLEFIELD GEOMETRY		M		
	1	Geometry Type	M	2-5A	FLOT
	2	Geometry Type Name	M	1-6AN	WOLF
E	1	ESTABLISHING AUTHORITY	O	1-10AN	
F	1	FIRE PLAN NAME	O	1-6AN	
G	NON-CIRCULAR GEOMETRY		C		
	1	Point Sequence Number	M	1-2N	10
	2	UTM Easting	M	6N	123456
	3	UTM Northing	M	1-8N	123456
H	CIRCULAR GEOMETRY		C		
	1	UTM Easting	M	6N	
	2	UTM Northing	M	1-8N	
	3	Radius	M	2-4N	
I	1	GRID ZONE	C	1-3NS	+31
J	1	AMMUNITION RESTRICTED	C	2A	BO
K	1	BOUNDARY IDENTIFICATION	C	1-6ANS	

18. SYS.RFR

Ser	Field Title		OCC	Field length	Examples
A	MESSAGE IDENTIFICATION		M		
	1	Message type	M	7X	SYS.RFR
	2	Originator	M	13X	1.1.1.AAA.BBB
B	1	OPTION	M	3A	XMT
C	1	DATE-TIME GROUP	M	6N	312359
D	1	FIRE PLAN NAME	C	1-6AN	
E	REPORT REQUIREMENT		C		
	1	Report Type	M	3-12AS	SPRT.GEOM
	2	Report Frequency	O	4-8A	
	3	Date-Time Effective From	O	6N	
	4	Date-Time Effective To	O	6N	
F	1	TARGET LIST DESIGNATOR	C	3A	
G	BATTLEFIELD GEOMETRY		C		
	1	Geometry Type	M	2-5A	FLOT
	2	Geometry Type Name	O	1-6AN	WOLF
H	UNIT		C		
	1	Section	O	1ANB	
	2	Platoon	O	1ANB	
	3	Battery/Company	O	1ANB	
	4	Battalion/Regiment	M	1-3ANB	
	5	Regiment/Brigade/ Division	O	1-3ANB	

19. SYS.RRM

Ser	Field Title		OCC	Field length	Examples
A	MESSAGE IDENTIFICATION		M		
	1	Message type	M	7X	SYS.RRM
	2	Originator	M	13X	1.1.1.AAA.BBB
B	MESSAGE REFERENCE		O		
	1	Message Type	M	6-12X	SITREP
	2	Originator	M	13X	1.1.1.BBB.AAA
	3	Date-Time of Reference	M	6N	021602
C	1	MESSAGE REPLAY	C	3A	WIL
D	1	REMARKS /Plain Text	C	1-353X	