

# **NATO STANDARD**

## **AEP-84 Volume I**

### **STANDARD INTERFACES OF UNMANNED AIRCRAFT (UA) CONTROL SYSTEM (UCS) FOR NATO UA INTEROPERABILITY - INTERFACE CONTROL DOCUMENT**

**EDITION A VERSION 1**

**APRIL 2017**



**NORTH ATLANTIC TREATY ORGANIZATION**

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**NORTH ATLANTIC TREATY ORGANIZATION (NATO)**

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**NATO LETTER OF PROMULGATION**

5 April 2017

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## **RECORD OF RESERVATIONS**

<b>CHAPTER</b>	<b>RECORD OF RESERVATION BY NATIONS</b>
<p>Note: The reservations listed on this page include only those that were recorded at time of promulgation and may not be complete. Refer to the NATO Standardization Document Database for the complete list of existing reservations.</p>	

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**RECORD OF SPECIFIC RESERVATIONS**

[nation]	[detail of reservation]

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### List of DCPs Incorporated into this Version

<b>DCP #</b>	<b>DCP Title</b>
<b>823</b>	CCI Req ID #
<b>827</b>	Performance Improvements and new Features to CBRN Messages
<b>828</b>	<b>GPT</b>
<b>832</b>	Subsystem Status Alert Message Gap
<b>835</b>	IFF Mode 2 Code
<b>842</b>	Loiter Pattern Report
<b>849</b>	Add Acknowledgement Bit to Header
<b>850</b>	Subsystem Status Message Gaps
<b>851</b>	Change IFF Mode 2 Code Unique ID to Match Ed3 Ver 1
<b>852</b>	IFF Identification of Position
<b>854</b>	Loiter Location and Waypoints
<b>855</b>	Contingency Flight Mode
<b>856</b>	Wind Direction - Ed 2
<b>858</b>	GPT Field Size Correction
<b>859</b>	GPT New Tag for File Timestamp
<b>860</b>	GPT Clarify Tag Length
<b>861</b>	Constrictive Limit on Rotational Rate Status
<b>863</b>	Inconsistent Prescription for Wrapper Errors
<b>867</b>	Ack to Indicate Failure
<b>870</b>	Miscellaneous Changes
<b>875</b>	Inconsistent Limit on Rotational Rate Command
<b>877</b>	GPT – Product Length Range Correction
<b>878</b>	Remove the Ack Workaround from CBRN Messages
<b>879</b>	Missing Loiter Pattern Speed Report
<b>880</b>	Missing Relative Route/Waypoint Report Message
<b>881</b>	Weapon Messages Integration
<b>882</b>	Remove Implicit Configuration
<b>884</b>	Flight Mode Message Merge
<b>885</b>	CBRN - Rename Field Exer/Oper Flag
<b>886</b>	Missing Report for CBRN4 Delivery Mode
<b>889</b>	Take out Navy from STANAG Title

898	Allow Additional Alert Information for Message #1100
899	ATP-45 Mapping Changes
891	IFF Updates
893	Admin - Mismatch between Commands and Status Messages
894	GPT – Product Field Set to Byte
900	Vehicle Type Range Correction
901	Bitmap Typo in Field 209.27
902	Information Type Inconsistencies
903	Update Terminology and ATP-45 Reference
904	Add Data Link ID and VSM ID to VSM Services Report
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911	Correct Enumeration Ranges for Payload Type
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932	Weapon Messages Revision
934	Update to Accepted DCP-891
941	Admin Ed 2 Ver 4 Final
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951	Replace Message #43 References with Message #49
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Note: XML files of AEP-84 Volume 1 can be found at the following APAN URL:  
<https://wss.apan.org/s/STANAG4586/default.aspx> or contact the STANAG 4586 Custodian for more information.

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## Chapter 1 INTRODUCTION

### **1.1. AIM**

The aim of this agreement is to promote interoperability of present and future Unmanned Aircraft Systems (UASs) in a NATO Combined/Joint Service Environment. Interoperability is required because it will significantly enhance the war fighting capability of the forces. Interoperability will increase flexibility and efficiency to meet mission objectives through sharing of assets and common utilization of information generated from UASs. The objective is to enable interoperability between the ground segments (e.g., UCSs), the air segments (e.g., Unmanned Aircraft (UA), and the Command, Control, Communication, Computer and Intelligence (C4I) segments of UASs operating in a NATO Combined/Joint environment. Compliance with this agreement alone enables, but does not achieve full interoperability between various UASs. Specifically, this agreement does not address platform and/or sensor operators' proficiency levels, nor does it define the CONOPs necessary to enact full interoperability. Interoperability Levels 3-5 assume a CONOPS supporting the operation of a UA and/or its payload(s) by other than the organic unit responsible for the UA. The implementation of the specified standard UCS interfaces will also facilitate the integration of different types of UASs into a NATO Combined/Joint Service battlefield environment. The herein specified Standardisation will support interoperability of legacy as well as future UASs.

### **1.2. AGREEMENT**

Participating nations agree to implement the standards presented herein in whole or in part within their respective UASs to achieve the desired Level of Interoperability (LOI).

### **1.3. REFERENCE DOCUMENTS**

The following Standardization Agreements (STANAGs), Military Standards (MIL-STDs), International Telecommunication Union (ITU) Recommendations and International Standards (ISs) contain provisions which, through references in this text, constitute provisions of this STANAG. At the time of publication, the editions indicated were valid. All recommendations and standards are subject to revision, and parties to agreements based on this STANAG are encouraged to investigate the possibility of applying the most recent editions of the STANAGs, MIL-STDs, ICAO Documents, ITU Recommendations and ISs listed below. NATO Standards Office (NSO) maintains registers of currently valid STANAGs.

AAP-6 (V) - Definitions
ADatP-3 - NATO Message Text Formatting System (Formets) - Concept of Formets (Conformets)
AEDP-2 - NATO ISR Interoperability Architecture
AEDP-4 - STANAG 4545, NATO Secondary Imagery Format (NSIF) Implementation Guide

APP 11 - NATO Message Catalogue (NMC)
Comité Consultatif International Téléphonique et Télégraphique (CCITT) v.42bis - Modem standard for error correction and compression at speeds of 28.8 kbps
Common Route Definitions (CRD ICD 2.0.2.0)
Digital Feature Analysis Data (DFAD)
ECMA Script scripting language (ECMA Script 262)
Electronic Industry Association (EIA) RS-170
File Transfer Protocol (FTP), IETF, RFC 959
Hypertext Transfer Protocol (HTTP) Version 1.1, IETF RFC 2616
ICAO document - Rules of the Air and Air Traffic Services, Doc 4444-RAC/501
Institute of Electrical and Electronics Engineers, Inc.(IEEE) Network Standards - 802
Internet Protocol (IP) (IPv4 (RFC 791, 792, 919,922, 1112))
IPv6 (RFC 2460-4, 2375, 2236)
ISO/DIS 9241-3 - Visual Display Requirements
ISO/DIS 9241-8 - Requirements for Displayed Colours
ISO/Work Doc 9241-9 - Non-Keyboard Input Devices
ISO/DIS 9241-10 - Dialogue Principles
ISO/Work Doc 9241-12 - Presentation of Information
ISO/CD 9241-13 - User Guidance
ISO/DIS 9241-14 - Menu Dialogues
ISO/CD 9241-16 - Direct Manipulation Dialogues
ISO/CD 13406-2 - Flat Panel Displays
International Organisation for Standardization/International Electrotechnical Commission ECMAScript Language Specification - ISO/IEC 16262
MIL-STD-2525B – Common Warfighting Symbology
MIL-STD-2401 - World Geodetic System – 84 (WGS – 84)
NATO C3 Technical Architecture (NC3TA) / Version 7 (All 5 volumes)
NATO Data Policy 2000 – 12.20-00
Network Time Protocol (V3), April 9, 1992, NTP (RFC-1305)
Society of Motion Picture and Television Engineers (SMPTE) 170 M
STANAG 1059 Letter Codes for Geographical Entities
STANAG 3150 Codification - Uniform System of Supply Classification
STANAG 3151 Codification - Uniform System of Item Identification
STANAG 3377 AR (Edition 6) – Air Reconnaissance Intelligence Report Forms
STANAG 3809 Digital Terrain Elevation Data (DTED) Exchange Standard
STANAG 4250 NATO Reference Module for Open Systems Interconnection - Part 1 General Description

STANAG 4545 NATO Secondary Imagery Format (NSIF)
STANAG 4559 NATO Standard Image Library Interface (NSILI)
STANAG 4575 NATO Advanced Data Storage Interface (NADSI)
STANAG 4607, NATO Ground Moving Target Indicator Format (NGMTIF)
STANAG 4609, NATO Digital Motion Imagery Standard
STANAG 7023 Air Reconnaissance Primary Imagery Data Standard
STANAG 7024 Imagery Air Reconnaissance Tape Recorder Standards
STANAG 7074 Digital Geographic Information Exchange Standard (DIGEST)
STANAG 7085 Interoperable Data Links for Imaging Systems
STDI-0002, National Imagery and Mapping Agency, "The Compendium of Controlled Extensions (CE) for the National Imagery Transmission Format (NITF)", CMETAA Support Data Extension.
Transport Control Protocol (TCP) (IETF STD 7) RFC 793 (TCP)
United States Message Text Format (USMTF)
User Datagram Protocol (UDP) (IEN 88, RFC 768, 1122)
Variable Message Format (VMF)

#### 1.4. General

The outline of this AEP-84 Volume I follows the following format:

- Chapter 1 - Introduction
- Chapter 2 - Terms and Definitions used in the AEP-84 Volume I
- Chapter 3 - Provides a top level description of the objectives and the approach taken to achieve UASs Interoperability through standardising the interfaces between the Core UCS (CUCS) and the UA, and the CUCS and the external C4I Systems. It also specifies the Human Computer Interface (HCI) requirements that the CUCS shall provide to the UAS operator. It describes the requirement for a standard functional UCS Architecture to accommodate those interfaces and refers to the following 3 chapters that contain the details of the Standards required by STANAG 4586. It also lists other STANAGs, standards and protocols that are required for achieving UASs interoperability and offers some considerations for their implementation.
- Chapter 4 - Data Link Interface (DLI)
- Chapter 5 - Command and Control Interface (CCI)
- Chapter 6 - Human Computer Interface (HCI)

#### 1.5. DETAILS OF AGREEMENT

STANAG 4586 defines the architectures, interfaces, communication protocols, data elements, message formats and identifies related STANAGs that compliance with is required to operate and manage multiple legacy and future UAVs in a complex NATO Combined/Joint Services Operational Environment. The UCS Architecture encompasses the Core UCS to handle UA Common/Core processes, the Data Link Interface (DLI) to enable operations with legacy as

well as future UASs, the Command and Control Interface (CCI) for UA and UA payload data dissemination to support legacy and evolving NATO C4I Systems and Architectures, and the HCI requirements to support the interface to the UAS operators. Five levels of interoperability are defined to accommodate operational requirements. AEP-84 Volume I contains the messages which support the Electro-Optical/Infra-Red (EO/IR), Synthetic Aperture Radar (SAR), Communications Relay, and Stores (e.g., weapons, payloads, etc.) across the DLI. As additional payloads are defined the STANAG will be updated accordingly to incorporate those payloads. The Command and Control Interface utilizes applicable messages from the NATO FORMETS, ADatP-3 Build 11. As this system is replaced with bit oriented message formats, this STANAG will be updated accordingly. In addition this STANAG supports the NATO Air Force Armaments Group (NAFAG) NATO ISR Interoperability Architecture (NIIA) in that it invokes compliance with the NIIA specified standards.

## 1.6. CHANGES TO EDITION 1

Based on the results of a Canadian funded STANAG 4586 Edition 1 validation effort using simulated environment, further analysis by PG/35 Specialist Team (ST) supported by NATO Industrial Advisory Group (NIAG) Study Group 73 (S/G 73), and feedback from national programs and industries supporting development of UASs, changes to Edition 1 have been identified, analyzed, and agreed to by the ST and are forwarded for national review and ratification. The changes fall into the following areas:

- Definitions of levels of interoperability have been revised to separate payload control (LOI 3) from UA control (LOI 4)
- Human Computer Interface (HCI) has been redefined as Core UA Control System (CUCS) capability requirements rather than as an interface like the DLI or CCI
- HCI guidance has been moved to the STANAG 4586 Implementation Guide
- Additional messages and fields have been added to the DLI in support of configuration definition of the UCS components (e.g., Core UCS and Vehicle Specific Module (VSM))
- Technical and administrative errors have been corrected and editorial changes to clarify requirements

## 1.7. STANAG MAINTENANCE AND UPDATE

STANAG 4586 will be maintained and updated to correct any latent errors, add improvements from lessons learned, and incorporate new requirements by the STANAG Custodian, supported by a multinational Custodian Support Team (CST). The STANAG has a high degree of continuing attention from the CST. As new editions are published, feedback is being collected on a continuing basis for follow-on editions. That experience gained in implementation is highly valued by the CST and should be forwarded to the STANAG 4586 Custodian, Mr. John Mayer, PEO (U&W) CSI, e-mail: john.e.mayer1@navy.mil.

## Chapter 2 TERMS AND DEFINITIONS

### **1 ACRONYMS AND ABBREVIATIONS**

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

#### **A**

ACCS	Army Command and Control System (US)/Air Command and Control System (NATO)
Accel	Acceleration
ACK	Acknowledge
ACM	Airspace Control Means
ACO	Airspace Control Order
ADatP-3	Allied Data Publication – 3
ADS	Automatic Dependent Surveillance
ADU	Air Defence Unit
AGL	Above Ground Level
AMPS	Aviation Mission Planning System
AMPN	Amplification
ANSI	American National Standards Institute
AOA	Angle Of Attack
AOI	Area Of Interest
AP	Allied Publication/Alliance Publication
API	Application Program(ming) Interface
ASCII	American Standard Code for Information Interchange
ASM	Air Space Management
ASW	Anti-Submarine Warfare
ATC	Air Traffic Control
ATP	Allied Tactical Publication
ATR	Automatic Target Recognition
ATS	Air Traffic Services

#### **B**

BDA	Battle Damage Assessment
BER	Bit Error Rate
BIT	Built-in-Test
BITE	Built-in-Test Equipment
BLOS	Beyond Line of Sight
BOM	Bit-Oriented Message

#### **C**

C2	Command and Control
C4I	Command, Control, Communications, Computers and Intelligence
CBIT	Continuous Built-in-Test
CBRN	Chemical, Biological, Radiological and Nuclear

CCI	Command & Control Interface
CCISM	Command and Control Interface Specific Module
CDL	Common Data Link
CDT	Control Data Terminal
CEN	European Standardisation Organisation
CEP	Circular Error Probability
CFOV	Centre Field of View
CG	Centre of Gravity
CGS	Common Ground Segment/Common Ground Station/Common Ground System
CIRC	Circular
CJTF	Combined Joint Task Force
CL	Connectionless
Cm	Centimetres
CO	Connection Oriented
COE	Common Operating Environment
CONOPS	Concept of Operations
COP	Common Operational Picture
CORBA	Common Object Request Broker Architecture
COTS	Commercial-Off-The-Shelf
CR	Communications Relay
CRD	Common Route Definition
CRT	Cathode Ray Tube
CUCS	Core UA Control System
<b>D</b>	
DC	Direct Current
DCE	Distributed Computing Environment
DCM	Data Link Control Module
DIGEST	Digital Geographic Information Exchange Standard
DII	Defence Information Infrastructure
DII/COE	Defence Information Infrastructure/Common Operating Environment
DIN	Deutsche Institut fur Normung
DL	Data Link
DLI	Data Link Interface
DoD	Department of Defence
DTED	Digital Terrain Elevation Data
<b>E</b>	
ECM	Electronic Counter Measures
EIA	Electronic Industries Association
EIA/IS	EIA Interim Standard
ELINT	Electronic Intelligence

EMCON	Emission Control
EO	Electro-Optical
EO/IR	Electro Optical/Infrared
EP	External pilot
ERF	Ego-Referenced Frame
ERS	Emergency Recovery System
ESM	Electronic Support Measures
ETA	Estimated Time of Arrival
ETSI	European Telecommunications Standards Institute
EW	Electronic Warfare
<b>F</b>	
FLIR	Forward Looking Infrared
FOB	Forward Operations Base
FOV	Field of View
FT	Flight Termination
FTP	File Transfer Protocol
<b>G</b>	
GMT	Greenwich Mean Time
GMTI	Ground Moving Target Indicator
GOTS	Government Off-The-Shelf
GPS	Global Positioning System
GUI	Graphical User Interface
<b>H</b>	
HALE	High Altitude, Long Endurance
HCI	Human Computer Interface
HF	High Frequency
HSI	Hyperspectral Imagery
HL	Hand Launched
HTML	Hyper Text Mark-up Language
HTTP	Hypertext Transfer Protocol
Hz	Hertz, cycles per second
<b>I</b>	
I/O	Input/Output
IA	International Agreement
ICAO	International Civil Aviation Organisation
ID	Identification
IDD	Interface Design Description/Interface Definition Document
IEA	Information Exchange Agreements
IEC	International Enterprise Committee/International Electro technical Commission
IEEE	Institute of Electrical and Electronics Engineers
IER	Information Exchange Requirements

IES	Imagery Exploitation System
IETF	Internet Engineering Task Force
IFF	Identification Friend or Foe
IL	Image Library
INS	Inertial Navigation System
IP	Internet Protocol/Internal Pilot
IPS	Image Print Services
IPX	NetWare Transport Protocol
IR	Infrared
IRS	Interface Requirements Specifications
ISAR	Inverse Synthetic Aperture Radar
ISDN	Integrated Services Digital Network
ISG	Industry Support Group
ISO	International Organisation for Standardisation
ISO/CD	Committee Draft of ISO
ISO/DIS	Draft International Standard of ISO
ISR	Intelligence, Surveillance, Reconnaissance
ISTAR	Intelligence, Surveillance, Target Acquisition and Reconnaissance
ITDP	International Technology Demonstration Program
ITU	International Telecommunication Union
ITU-T(SB)	International Telecommunications Union – Telecommunications (Standardisation Bureau)
<b>J</b>	
JFACC	Joint Force Air Component Commander
JFC	Joint Force Commander
JPEG	Joint Photographic Experts Group
JSH	JASA Standards Handbook
JSWG	JASA Standards Working Group
JTA	Joint Technical Architecture
JTF	Joint Task Force
JTFC	Joint Task Force Commander
<b>K</b>	
Kilo	1,000
Km	Kilometres
<b>L</b>	
L&R	Launch and Recovery
L-16	Link-16 (TADIL-J message standard)
LIDAR	Light Detection And Ranging
LAN	Local Area Network
LAS	Local Access Subsystem
LB	Land-Based
LCD	Liquid Crystal Display

LOI	Level of Interoperability
LOS	Line of Sight
LRF	Laser Range Finder
<b>M</b>	
MAV	Micro Air Vehicle
Mb	Megabit
MB	Megabyte
Mb/s	Megabits per second
MB/s	Megabytes per second
Met	Meteorological
MGRS	Military Grid Reference System
MIJI	Meaconing, Intrusion, Jamming, and Interference
MIL	Military
MIL-STD	Military Standard
MIME	Multipurpose Internet Mail Extension
MIN	Minimum
MMP	Modular Mission Payload
MMS	Manufacturing Messaging Specification
MOA	Memorandum of Agreement
MOTS	Military Off-The-Shelf
MOU	Memorandum of Understanding
MP	Mission Planning/Mission Planner
MPEG	Motion Pictures Experts Group
MPO	Mission Planning Operator/Mission /Payload Operator
MPS	Metres per second
MSE	Mobile Subscriber Equipment
Msg	Message
MSI	Multi-Spectral Imagery
MSK	Minimum Shift Keying
MSL	Mean Sea Level
MTF	Message Text Formats
MTI	Moving Target Indicator
<b>N</b>	
N/A	Not Applicable
NATO	North Atlantic Treaty Organisation
NBC	Nuclear, Biological and Chemical
NC3TA	NATO C3 Technical Architecture
NCIS	NATO Common Interoperability Standards
NCOE	NATO Common Operating Environment
NCSP	NC3 Common Standards Profile
Near RT	Near Real Time
NED	NATO Effective Date

NIIA	NATO ISR Interoperability Architecture
NIMP	NATO Interoperability Management Plan
NIIRS	National Imagery Interpretation Rating Scale
NIPD	NATO Interoperability Planning Document
NITF	National Imagery Transmission Format
NITFS	National Imagery Transmission Format Standard
Nm	Nanometre
NNAG	NATO Naval Armaments Group
NOSIP	NATO Open System Interconnection Profile
NOTS	NATO Off-The-Shelf
NRT	Non-Real Time
NSE	Non Standard Equipment
NSIF	NATO Secondary Imagery Format
NSIL	NATO Standard Image Library
NSILI	NATO Standard Image Library Interface
NSO	NATO Standardization Office
NSR	NATO Staff Requirements
NTF	Network File Server
NTIS	NATO Technical Interoperability Standards
NTSC	National Transmission Standards Committee
<b>O</b>	
OPFOR	Opposing Force
OPS	Operations
OSE	Open System Environment
OSI	Open System Interconnection (model)
OTH	Over The Horizon
OTH-T	Over The Horizon – Targeting
<b>P</b>	
PDF	Portable Document Format
PDU	Power Distribution Unit
PG/35	Project Group 35
PO	Payload Operator
Pyld	Payload
<b>Q</b>	
QoS	Quality of Service
<b>R</b>	
Rad	Radians
RAID	Redundant Array of Inexpensive/Independent Disks
RECCEXRE	Reconnaissance Exploitation Report
RF	Radio Frequency
RFC	Request for Comment
ROS	Relief on Station/Rules of Safety

RP	Route Plan
Rpt	Report
RT	Real Time
RTP	Real Time Protocol/ Real Time Processor
Rx	Receive
<b>S</b>	
SA	Situational Awareness
SALUTE	Size, Activity, Location, Unit, Time, Equipment
SAR	Synthetic Aperture Radar/Search And Rescue
SATCOM	Satellite Communications
SB	Sea-based
SEC	Seconds
SED	Signal External Descriptor
SIGINT	Signals Intelligence
SINCGARS	Single Channel Ground and Airborne Radio System
SMPTE	Society of Motion Picture and Television Engineers
SMTP	Simple Mail Transfer Protocol
SNR	Signal to Noise Ratio
SSR	Secondary Surveillance Radar
ST	Specialist Team
STANAG	(NATO) Standardization Agreement
<b>T</b>	
TBD	To Be Defined
TCDL	Tactical Common Data Link
TCP/IP	Transfer Control Protocol/Internet Protocol
Tgt	Target
TV	Television
TX	Transmit
<b>U</b>	
UA	Unmanned Aircraft
UAV	Unmanned Aerial Vehicle/Uninhabited Aerial Vehicle
UAS	Unmanned Aircraft System
UB	Unified Build
UCAV	Unmanned/ Uninhabited Combat Aerial Vehicle
UDP	User Datagram Protocol
UES	UA Exploitation System
UHF	Ultra High Frequency
UI	User Interface
UJTL	Universal Joint Task List
UPS	Uninterruptible Power Supply
URL	Uniform Resource Locator
USIS	United States Imagery Standards

USMTF	United States Message Text Formatting
UTC	Universal Time Coordinated
UTM	Universal Transverse Mercator
<b>V</b>	
VCR	Video Cassette Recorder
VDL	VHF Data Link
VDT	Vehicle Data Terminal
VDU	Visual Display Unit
VHF	Very High Frequency
VISP	Video Imagery Standards Profile
VMAP	Vector Map
VMF	Variable Message Format
VSM	Vehicle Specific Module
<b>W</b>	
WAN	Wide Area Network
WAS	Wide Area Subsystem
WGS-84	World Geodetic System – 84
WIMP	Windows, Icons, Mouse and Pull-down/pop-up (menus)
WP	Waypoint
WRF	World-Referenced Frame
<b>X</b>	
XML	Extended Mark-up Language
<b>Y</b>	
<b>Z</b>	

## 2. TERMS AND DEFINITIONS

The following terms and definitions are used for the purpose of this agreement:

Advisories	An alert that requires crew awareness but not immediate awareness nor immediate attention.
Air Reconnaissance	The collection of information of intelligence interest either by visual observation from the air or through the use of airborne sensors.
Air Traffic Control (ATC)	A service provided for the purposes of: a) preventing collisions between aircraft and in the manoeuvring area between aircraft and obstructions; and b) expediting and maintaining an orderly flow of air traffic.
Aircraft Handover	The process of transferring control of aircraft from one controlling authority to another.
Alert	A signal or combination of signals that informs the aircrew of the existence of a warning, caution, or advisory condition, and may inform the aircrew of the nature of the warning, caution, or advisory condition.
Allied Data Publication – 3 (ADatP-3)	The NATO Message Text Formatting System (FORMATS) provides the rules, constructions and vocabulary for standardised CHARACTER-oriented MESSAGE TEXT FORMATS (MTF) that can be used in both manual and computer assisted operational environments. FORMETS is specified in Allied Data Publication Number 3 (ADatP-3).
Altitude	<p>The vertical distance of a level, a point or an object considered as a point, measured from mean sea level. The terms most relevant to UA operations are:</p> <ul style="list-style-type: none"> <li>- Absolute Altitude: The height of an aircraft directly above the surface or terrain over which it is flying.</li> <li>- Critical Altitude: The altitude beyond which an aircraft or air-breathing guided missile ceases to perform satisfactorily.</li> <li>- True Altitude: The height of an aircraft as measured from mean sea level.</li> </ul>
Analysis	In intelligence usage, a step in the processing phase of the intelligence cycle in which information is subjected to review in order to identify significant facts for subsequent interpretation.
Automated Take-off and Landing	The ability of the UA to be launched with a single command once planning and pre-flight has been conducted and permission to launch has been granted. Includes releasing the UA from a securing device and flight of the UA to the first waypoint and the ability to land and secure the UA with a single command once the UA has been stationed at a gate position no closer than 100 meters to the landing spot.
Battle Damage Assessment (BDA)	The determination of the affect of all air attacks on targets (e.g., bombs, rockets, strafing, etc.).
Byte	Eight bits.
Cassette	In photography, a reloadable container for either unexposed or exposed sensitised materials which may be removed from the camera or darkroom equipment under lighted conditions.

Cautions	An alert indicating a potentially dangerous condition requiring immediate crew awareness but not immediate action.
Chemical Monitoring	The continued or periodic process of determining whether or not a chemical agent is present.
Classification	The ability to determine unique characteristics about a contact, which allow the differentiation of military and commercial contacts and determination of contact class and type.
Command and Control	The exercise of authority and direction by a properly designated commander over assigned forces in the accomplishment of a mission.
Command and Control Interface (CCI)	The interface between the UCS Core and the external C4I systems. It specifies the data requirements that should be adopted for communication between the UCS Core and all C4I end users through a common, standard interface.
Command and Control Interface Specific Module (CCISM)	Conversion software and/or hardware between the CCI and incompatible C4I systems. May form part of a particular UCS implementation to establish a connection between the UCS and specific "customers" of the UA system (i.e. one or more C4I systems). Can range in complexity from a simple format or protocol translator to a user-specific application to adapt the type of information to C4I requirements.
Command and Control Information System	An integrated system comprised of doctrine, procedures, organisational structure, personnel, equipment, facilities and communications which provides authorities at all levels with timely and adequate data to plan, direct and control their activities.
Commonality	An item of an interchangeable nature which is in common use by two or more nations or services of a nation.
Communications Plan	The overarching plan which covers all communication aspects. Includes the Data Link Plan.
Compatibility	The suitability of products, processes or services for use together under specific conditions to fulfil relevant requirements without causing unacceptable interactions.
Component	In logistics, a part or combination of parts having a specific function, which can be installed or replaced only as an entity.
Compression	The ability to transmit the same amount of data in fewer bits. There are a variety of data compression techniques, but only a few have been standardized. The CCITT has defined a standard data compression technique for transmitting faxes (Group 3 standard) and a compression standard for data communications through modems (CCITT V.42bis). In addition, there are file compression formats, such as ARC and ZIP. Data compression is also widely used in backup utilities, spreadsheet applications, and database management systems. Certain types of data, such as bit-mapped graphics, can be compressed to a small fraction of their normal size.
Concept of Operations	A clear and concise statement of the line of action chosen by a commander in order to accomplish his mission.
Continuous Strip Imagery	Imagery of a strip of terrain in which the image remains unbroken throughout its length, along the line of flight.

Control Data Terminal	The data link element consists of the Vehicle Data Terminal (VDT) in the Unmanned Aircraft and the Control Data Terminal (CDT) that can be located either on the ground or in the air (e.g., Command and Control aircraft). Connectivity between the CDT and VDT is prerequisite for Level 2, 3, 4, and 5 interoperability.
Controlled Airspace	An airspace of defined dimensions within which air traffic control service is provided to controlled flights (e.g., flights within controlled airspace require approval by/coordination with the controlling authority, and certain manoeuvres may be prohibited or restricted, or require supervision).
Core UCS (CUCS)	Provides the UA operator with the functionality to conduct all phases of a UA mission. It shall support the requirements of the DLI, CCI, and HCI. Also provides a high resolution, computer generated, graphical user capability that enables a qualified UA operator the ability to control different types of UAs and payloads.
Countermeasures	That form of military science that, by the employment of devices and/or techniques, has as its objective the impairment of the operational effectiveness of enemy activity.
Damage Assessment	The determination of the effect of attacks on targets.
Data Communication	The transfer of information between functional units by means of data transmission according to a protocol.
Data Link	The means of connecting one location to another for the purpose of transmitting and receiving data.
Data Link Interface (DLI)	The interface between the Vehicle Specific Module (VSM) and the UCS core element. It provides for standard messages and formats to enable communication between a variety of UAs and NATO standardised control stations.
Data Link Plan	The details of the available link including the band and frequencies to be used. It is associated with waypoints within the route and the details of required actions made available for cueing the operator.
Dispensing Payloads	Objects that are released from the UA as part of the UA mission objectives. This can include the release of weapons or deployment of remote sensors, etc.
Electromagnetic Spectrum	The range of frequencies of electromagnetic radiation from zero to infinity.
Electronic Warfare (EW)	Military action to exploit the electromagnetic spectrum encompassing: the search for, interception and identification of electromagnetic emissions, the employment of electromagnetic energy, including directed energy, to reduce or prevent hostile use of the electromagnetic spectrum, and actions to ensure its effective use by friendly forces.
Emergency Recovery Plan	In case of failures such as data link loss, UAs need to automatically carry out recovery actions referred to as Rules of Safety (ROS). The ROS are selected at the mission planning stage. The ROS differ according to the priority given to emergency action relative to that given to mission execution. Using the mission planning application the UCS operator selects the appropriate safety scenario (e.g., to define a pre-programmed recovery route).

Encoding	Converting information or data from a system, format or signal to another.
Exercise	A military manoeuvre or simulated wartime operation involving planning, preparation, and execution. It is carried out for the purpose of training and evaluation. It may be a combined, joint, or single Service exercise, depending on participating organisations.
Field of View	In photography, the angle between two rays passing through the perspective Centre (rear nodal point) of a camera lens to the two opposite sides of the format. Not to be confused with angle of view.
Formatted Message Text	Words composed of several sets ordered in a specified sequence, each set characterized by an identifier and containing information of a specified type, coded and arranged in an ordered sequence of character fields in accordance with the NATO message text formatting rules. It is designed to permit both manual and automated handling and processing.
Frame	In photography, any single exposure contained within a continuous sequence of photographs.
Free Form Message Text	Words without prescribed format arrangements. It is intended for fast drafting as well as manual handling and processing.
Functional Architecture	Establishes the following functional elements and interfaces: <ul style="list-style-type: none"> <li>• Core UCS (CUCS)</li> <li>• Data Link Interface (DLI)</li> <li>• Command and Control Interface (CCI)</li> <li>• Vehicle Specific Module (VSM)</li> <li>• Command and Control Interface Specific Module (CCISM)</li> </ul>
Fusion	The blending of intelligence and/or information from multiple sources or agencies into a coherent picture. The origin of the initial individual items should then no longer be apparent.
Handover	The act of passing control of a UA and/or a payload from one UCS to another UCS and/or transferring of data link control.
Human Computer Interface (HCI)	Definitions of the requirements of the functions and interactions that the UCS should allow the operator to perform. Will support any HCI requirements that are imposed on the CUCS by the Command and Control Interface (CCI) and Data Link Interface (DLI). Will also support any specific or unique CCI Specific Module (CCISM) or Vehicle Specific Module (VSM) display requirements.
Hyperspectral Imagery (HSI)	The image of an object obtained simultaneously using hundreds or thousands of discrete spectral bands.
Image	A two-dimensional rectangular array of pixels indexed by row and column.
Imagery	Collectively, the representations of objects reproduced electronically or by optical means on film, electronic display devices, or other media.

Imagery Exploitation	The cycle of processing and displaying, assembly into imagery packs, identification, interpretation, mensuration, information extraction, the preparation of reports (including annotated images) and the dissemination of information.
Integration	Refers to combining segments – not systems – and ensuring that the segments work correctly within the environment; do not adversely impact one another; and conform to standards. Integration does not imply interoperability. It only provides a level of assurance that the system will work as designed.
Intelligence	The product resulting from the processing of information concerning foreign nations, hostile or potentially hostile forces or elements, or areas of actual or potential operations. The term is also applied to the activity which results in the product and to the organisations engaged in such activity.
Interaction	A one or two-way exchange of data among two or more systems/sub-systems.
Interface	(1) A concept involving the definition of the interconnection between two equipment items or systems. The definition includes the type, quantity, and function of the interconnecting circuits and the type, form, and content of signals to be interchanged via those circuits. Mechanical details of plugs, sockets, and pin numbers, etc., may be included within the context of the definition. (2) A shared boundary, (e.g., the boundary between two subsystems or two devices). (3) A boundary or point common to two or more similar or dissimilar command and control systems, subsystems, or other entities against which or at which necessary information flow takes place. (4) A boundary or point common to two or more systems or other entities across which useful information flow takes place. (It is implied that useful information flow requires the definition of the interconnection of the systems which enables them to interoperate.) (5) The process of interrelating two or more dissimilar circuits or systems. (6) The point of interconnection between user terminal equipment and commercial communication-service facilities.
Interoperability	The ability of Alliance forces and, when appropriate, forces of Partner and other nations to train, exercise and operate effectively together in the execution of assigned missions and tasks.
Joint	Adjective used to describe activities, operations and organisations in which elements of at least two services participate.
Laser Designator	A device that emits a beam of laser energy which is used to mark a specific place or object.
Laser Range-Finder	A device which uses laser energy for determining the distance from the device to a place or object.
LIDAR	An acronym of Light Detection And Ranging, describing systems that use a light beam in place of conventional microwave beams for atmospheric monitoring, tracking and detection functions.

Meaconing	A system of receiving radio beacon signals and rebroadcasting them on the same frequency to confuse navigation. The meaconing stations cause inaccurate bearings to be obtained by aircraft or ground stations.
Metadata	Data about data. The term is normally understood to mean structured data about resources that can be used to help support resource description and discovery, the management of information resources (e.g., to record information about their location and acquisition), long-term preservation management of digital resources, and for help to preserve the context and authenticity of resources. Might be technical in nature, documenting how resources relate to particular software and hardware environments or for recording digitisation parameters. In short, any kind of standardised descriptive information about resources, including non-digital ones.
Mission Plan	The route planning, payload planning, data link planning (including frequency planning), and UA emergency recovery planning (rules of safety) for a UA flight.
Modularity	Use of sub-systems or components from one system to function properly as part of another system. The interface at the sub-system level is sufficiently defined.
Motion Imagery	A sequence of images, with metadata, which are managed as a discrete object in standard motion imagery format and displayed as a time sequence of images.
Moving Map Display	A display in which a symbol, representing the vehicle, remains stationary while the map or chart image moves beneath the symbol so that the display simulates the horizontal movement of the vehicle in which it is installed.
Moving Target Indicator (MTI)	A radar presentation which shows only targets which are in motion. Signals from stationary targets are subtracted out of the return signal by the output of a suitable memory circuit.
Multispectral Imagery (MSI)	The image of an object obtained simultaneously in a number of discrete spectral bands.
National Transmission Standards Committee (NTSC)	The first colour TV broadcast system was implemented in the United States in 1953. This was based on the NTSC standard. NTSC is used by many countries on the North American continent and in Asia including Japan. This U.S. video standard uses EIA RS-170 and SMPTE 170 M – 1994 formats. The standard applies to imagery with metadata in either closed caption overlays or encoded via closed caption. NTSC runs on 525 lines/frame and 30 frames/second with 2:1 interlace.
Native System	All components which compose a unique UA system.
NATO ISR Interoperability Architecture (NIIA)	The architecture that defines the STANAGs used for ISR sensor system interoperability. This architecture is defined in AEDP-2.
NATO OSI Profile Strategy (NOSIP)	Interoperability strategy now merged into the NC3TA.

NATO Standardization Agreement (NATO STANAG)	The record of an agreement among several or all the member nations to adopt like or similar military equipment, ammunition, supplies, and stores; and operational, logistic, and administrative procedures. National acceptance of a NATO Allied publication issued by the NATO Standardization Office (NSO) may be recorded as a Standardization Agreement.
NC3 Common Standards Profile (NCSP)	The minimum set of communication and information technology standards to be mandated for the acquisition of all NATO C3 systems.
NC3 Technical Architecture (NC3TA)	The technical, standards-related view of an overarching NC3 Architectural Framework.
Near Real Time	Pertaining to the timeliness of data or information which has been delayed by the time required for electronic communication and automatic data processing. This implies that there are no significant delays.
Network	(1) An interconnection of three or more communicating entities and (usually) one or more nodes. (2) A combination of passive or active electronic components that serves a given purpose.
Open Systems Interconnect Model	This model is defined in ISO/IEC 7498-1.
Order of Battle	The identification, strength, command structure, and disposition of the personnel, units, and equipment of any military force.
Passive	In surveillance, an adjective applied to actions or equipment which emits no energy capable of being detected.
Payload	UA sensor(s), weapons, chaff, pamphlets, onboard systems, etc. carried onboard which are used to accomplish a specified mission.
Payload Plan	Details of the sensor to be used, or which sensors are to be loaded if multiple payloads are within the UA capability. At specific points along a route there may be pre-planned sensor operations and the details of these have to be incorporated into the payload plan and associated with waypoints in the route. Available as hard copy for UA payload loading and for display with or alongside the route plan, action cueing has to be incorporated either for the operator or the UA depending on system sophistication.
	Includes payload configuration (e.g., payload type and lens size), payload imagery extraction (e.g., desired resolution), and operator commands for controlling both EO/IR and SAR payloads (e.g., zoom settings, depression angle, and focus).
Primary Data	Data directly received from the sensor.
Primary Imagery	Unexploited, original imagery data that has been derived directly from a sensor. Elementary processing may have been applied at the sensor, and the data stream may include auxiliary data.
Processed Imagery	Imagery that has been formatted into image pixel format, enhanced to remove detected anomalies and converted to a format appropriate for subsequent disposition.

Protocol	(1) In general, A set of semantic and syntactic rules that determine the behaviour of functional units in achieving communication. For example, a data link protocol is the specification of methods whereby data communication over a data link is performed in terms of the particular transmission mode, control procedures, and recovery procedures. (2) In layered communication System Architecture, a formal set of procedures that are adopted to facilitate functional interoperation within the layered hierarchy. Note: Protocols may govern portions of a network, types of service, or administrative procedures.
Real Time	Pertaining to the timeliness of data or information that has been delayed only by the time required for electronic communication. This implies that there are no noticeable delays.
Reconnaissance	A mission undertaken to obtain, by visual observation or other detection methods, information about the activities and resources of an enemy or potential enemy; or to secure data concerning the meteorological, hydrographic characteristics of a particular area.
Recovery	A mission which involves the return of an aircraft to base and includes the approach to the landing platform, & landing. If the UA is to be stowed after flight, securing on deck and handling of the UA is also included.
Resolution	A measurement of the smallest detail which can be distinguished by a sensor system under specific conditions.
Route Plan	A set of waypoints for the UA to follow, as well as general UA commands for auxiliary systems (e.g., lights, IFF/SSR, de-icing, etc.) and emergency operation commands. Taxi or flight patterns may be incorporated into the route either as a series of sequenced waypoints or as 'seed' waypoints with range and bearing information, which, will depend on the sophistication of the UCS and UA systems.
Scalability	The characteristic that enables system size and capability to be tailored dependent on the user needs.
Search and Rescue	The use of aircraft, surface craft, submarines, specialized rescue teams and equipment to locate and recover personnel in distress on land or at sea.
Secondary Imagery	Imagery and/or imagery products derived from primary imagery or from the further processing of secondary imagery.
Sensor	Equipment which detects, and may indicate, and/or record objects and activities by means of energy or particles emitted, reflected, or modified by objects.
Shall	Mandatory compliance.
Should	Recommended compliance.
Signals Intelligence	The generic term used to describe communications intelligence and electronic intelligence when there is no requirement to differentiate between these two types of intelligence, or to represent fusion of the two.

Software	A set of computer programs, procedures and associated documentation concerned with the operation of a data processing system, (e.g., compilers, library routines, manuals, and circuit diagrams).
STANAG	The NATO term derived from standardization agreement. See NATO Standardization Agreement.
Standardisation	The development and implementation of concepts, doctrines, procedures and designs to achieve and maintain the required levels of compatibility, interchangeability or commonality in the operational, procedural, material, technical and administrative fields to attain interoperability.
Storage	a) The retention of data in any form, usually for the purpose of orderly retrieval and documentation. b) A device consisting of electronic, electrostatic or electrical hardware or other elements into which data may be entered, and from which data may be obtained.
Surveillance	The systematic observation of aerospace, surface or subsurface areas, places, persons, or things, by visual, aural, electronic, photographic, or other means.
Synthetic Aperture Radar (SAR)	A system that uses the frequency shifts associated with the motion of the sensor (Doppler shift) to produce an image with higher resolution than would be available with only the radar system's beam width and pulse length. It requires complex data processing after collection of the radar data. Complements photographic and other optical imaging capabilities because of the minimum constraints on time-of-day and atmospheric conditions and because of the unique responses of terrain and cultural targets to radar frequencies.
System Architecture	Defines the physical connection, location and identification of the key nodes, circuits, networks, war fighting platforms, etc., associated with information exchange and specifies systems performance parameters. Constructed to satisfy operational architecture requirements per the standards defined in the technical architecture.
Target	a) A geographical area, complex, or installation planned for capture or destruction by military forces. b) In intelligence usage, a country, area, installation, agency, or person against which intelligence operations are directed.
Target Acquisition	The detection, identification, and location of a target in sufficient detail to permit the effective employment of weapons. Increasingly applied to reconnaissance as the object(s) of search and location activity, whether to provide intelligence data or to cue weapon systems directly.
Targeting	The ability to report the position (may include speed and direction) of a target detected with an UA payload. Target position is reported in terms of latitude and longitude (may include altitude) or in terms relative to a point. Target position information is sufficiently accurate to support weapon system fire control requirements.

Technical Architecture	A minimal set of rules governing the arrangement, interaction, and interdependence of the parts or elements whose purpose is to ensure that a conformant system satisfies a specific set of requirements. It identifies system services, interfaces, standards, and their relationships. It provides the framework, upon which engineering specifications can be derived, guiding the implementation of systems. Simply put, it is the “building codes and zoning laws” defining interface and interoperability standards, information technology, security, etc.
Tracking	Accurate location and updating of target positions (in terms of geographic co-ordinates) by radar, optical or other means.
Unmanned Aircraft System (UAS)	Includes the UA, modular mission payloads, data links, launch and recovery equipment, mission planning and control stations, data exploitation stations and logistic support.
Variable Message Format (VMF)	Used between systems requiring variable bit-oriented messages.
Vehicle Data Terminal	The data link element consists of the Vehicle Data Terminal (VDT) in the Unmanned Aircraft and the Control Data Terminal (CDT) that can be located either on the ground or in the air (e.g., Command and Control aircraft). Connectivity between the CDT and VDT is prerequisite for Level 2, 3, 4, and 5 interoperability.
Vehicle Specific Module (VSM)	A function that resides between the DLI and the UA subsystem. Facilitates compliance with this STANAG by acting as a bridge between standard DLI data formats, and protocols, and a specific UA.
Video Imagery	A sequence of images, with metadata, which is collected as a timed sequence of images in standard motion imagery format, managed as a discrete object in standard motion imagery format, and displayed as a sequence of images. Video imagery is a subset of the class of motion imagery.
Warnings	An alert indicating a hazardous condition requiring immediate action to prevent loss of life, equipment damage, or failure of the mission.
Waypoint	A point on a UA route which is defined by latitude/longitude. Altitude is usually defined.
Waypoint Control	Semi-autonomous or man-in-the-loop method of UA control involving the use of defined points (latitude/longitude/altitude) to cause the UA (vehicle, sensor(s), weapons, dispensable payloads, onboard systems, etc.) to accomplish certain actions.

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## 1 INTRODUCTION

### 1.1 STANAG 4586 OBJECTIVE

1. Unmanned Aircraft (UA) have become valuable assets in helping Joint Force Commanders (JFC) to meet a variety of theatre, operational and tactical objectives. The optimum synergy among the various national UAs deployed requires close co-ordination and the ability to quickly task available UA assets, the ability to mutually control the UAs and their payloads, as well as rapid dissemination of the resultant information at different command echelons. This requires the employed Unmanned Aircraft Systems (UASs) to be interoperable.

2. Currently, many UASs are not fully interoperable. The interfaces defined in the NIIA provide interoperability for ISR systems at Levels 1 and 2 for digital sensors compliant with the applicable referenced STANAGS, 7085 compliant data link and NC3TA specified communications protocols.

3. Current or "legacy" UASs have been designed and procured nationally and contain system elements that are generally unique and system specific. They do not have standard interfaces between the system elements. This results in a variety of non-interoperable "stovepipe" systems. Although commonality of hardware and software would be a solution to achieve interoperability and may be desirable from an economic standpoint, commonality is not mandatory.

4. In order to enable interoperability for UASs the implementation of standards for key system interfaces and functions is required. These standards are laid down in a number of existing or emerging NATO STANAGs and generally applied commercial standards documents. They are referred to and listed in this STANAG, where they are applicable. The respective operational requirements and approved Concept of Operations (CONOPS) will determine or drive the required Level of Interoperability (LOI) (see Section 2.3 for definition) that the specific UAS will achieve.

5. The objective of STANAG 4586 is to specify the interfaces that shall be implemented in order to achieve the operationally required and feasible LOI according to the respective UAS's CONOPS as applicable to the specific system and theatre of operations [UCS 0001]. This will be accomplished through implementing standard interfaces in the UA Control System (UCS) to communicate with different UAs and their payloads, as well as with different C4I Systems. The implementation of standard interfaces will also facilitate the integration of components from different sources as well as the interoperability of legacy systems.

6. The standards in STANAG 4586, which are identified as mandatory, shall be implemented as a whole in order to achieve the required LOI [UCS 0002]. It is assumed that air safety regulations will require the certification of new combinations of UASs, which result from combining the operation of assets from different UASs. Compliance with STANAG 4586 will ease this process and likely UAS combinations can be certified in advance.

7. On this basis, UASs that are compliant with STANAG 4586 will increase NATO Combined/Joint Service flexibility and efficiency to meet mission objectives through the sharing of assets and common utilisation of information generated from UASs.

### 1.2 ASSUMPTIONS AND CONSTRAINTS

This STANAG was developed using the following assumptions and constraints:

- Elements of the system (e.g., Core UA Control System (CUCS), Data Link Interface (DLI) Vehicle Specific Module (VSM), Command and Control Interface (CCI), Command and Control Interface Specific Module (CCISM),) are not required to be co-located.

- The STANAG requirements have been developed independent of national CONOPS. Thus it is not the intent to define or imply specific CONOPS in this STANAG.
- This STANAG addresses the interface with Airspace Management Authority required to coordinate the operation of UAs in a controlled air space. It does not address or imply the overall requirements and required certifications that may be necessary to operate UAs in controlled air space.
- Critical (hard) real time requirements of UA and payload control shall be allocated to the VSM function [UCS 0003]. Near real time requirements can be allocated to the CUCS as long as the STANAG 4586 specified latency requirements for the respective messages are met, and the respective system requirements are satisfied.
- The UAS scalability is independent of the contents of the STANAG.

### **1.3 AEP-84 VOLUME I STRUCTURE**

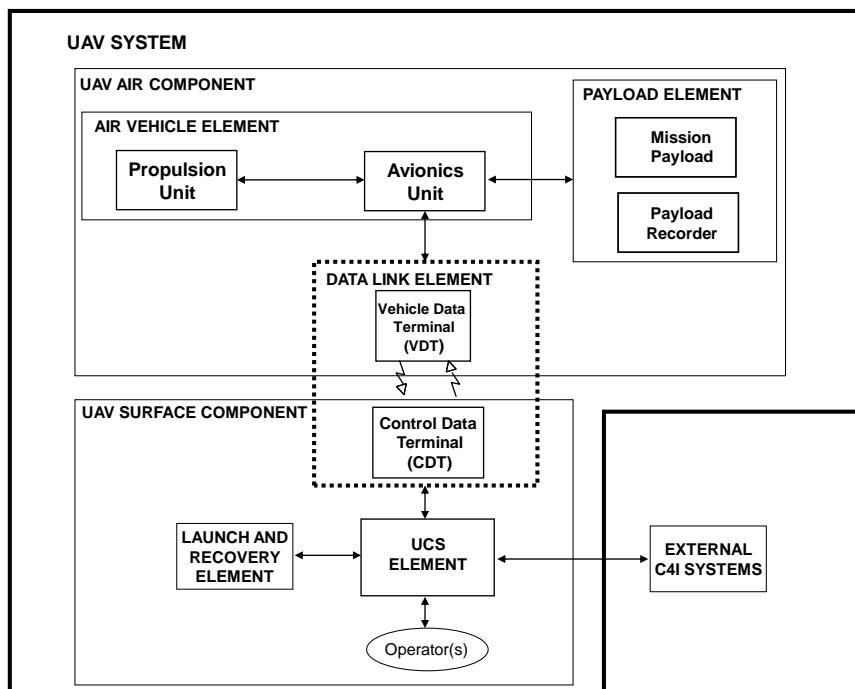
The first two chapters provide the introduction and terms and definitions respectively. Chapter 3 provides a top level description of interoperability objectives and the approach taken to achieve UASs interoperability through standardising the interfaces between the CUCS and the UA, the CUCS and external C4I systems, and the CUCS to the UAS operator. It describes the requirement for a standard functional UCS Architecture to accommodate those interfaces and refers to Chapters 4-6 that contain the details of the standards required by STANAG 4586. It also lists other STANAGs, standards and protocols that are required for achieving UASs interoperability and offers some considerations for their implementation.

- Chapter 4 explains the approach to standardising the DLI and the functionality of the VSM. It contains the standard messages and protocols required at the DLI that enable the CUCS to communicate with and exploit different UAs and payloads and to support the required UAS operator(s) interface as specified in the Human Computer Interface (HCI), Chapter 6.
- Chapter 5 shows the approach selected to standardise the CCI and the application of the Command and Control Interface Specific Module (CCISM). The chapter contains the Information Exchange Requirements (IER), Attachment 5 - 1 and lists the UCS ADatP-3 Message Implementation Requirements, Attachment 5 - 2, to satisfy the IER requirements and to support the required UAS operator(s) interface as specified in the Human Computer Interface (HCI), Chapter 6.
- Chapter 6 describes the Human Computer Interface (HCI) requirements and services that the CUCS will provide to the UAS operator(s).

## 2 INTEROPERABILITY CONCEPTS

### 2.1 OVERVIEW

1. A UAS can be divided into five distinct elements as shown in Figure 3 - 1. The UA element consists of the airframe, propulsion and the avionics required for UA and flight management. The payload element is comprised of payload packages. These can be sensor systems and associated recording devices that are installed on the UA, or they can consist of stores, e.g. weapon systems, and associated control/feedback mechanisms, or both. As illustrated, the data link element consists of the vehicle data terminal in the UA and the control data terminal (may be located on surface, sub-surface or air platforms). Control of the UAS is achieved through the UCS and data link elements. Although shown as part of the UA Surface Component, the UCS and the associated data link terminal can be located in any platform, (e.g., another air platform). The UCS element incorporates the functionality to generate, load and execute the UA mission and to disseminate useable information data products to various C4I systems. It should be noted that Figure 3-1 shows a common path for UA command and control, payload command and control, and products. These functions may be accomplished on separate, independent data links. The launch and recovery element incorporates the functionality required to launch and recover the UA(s).



**Figure 3 - 1. UAS Elements**

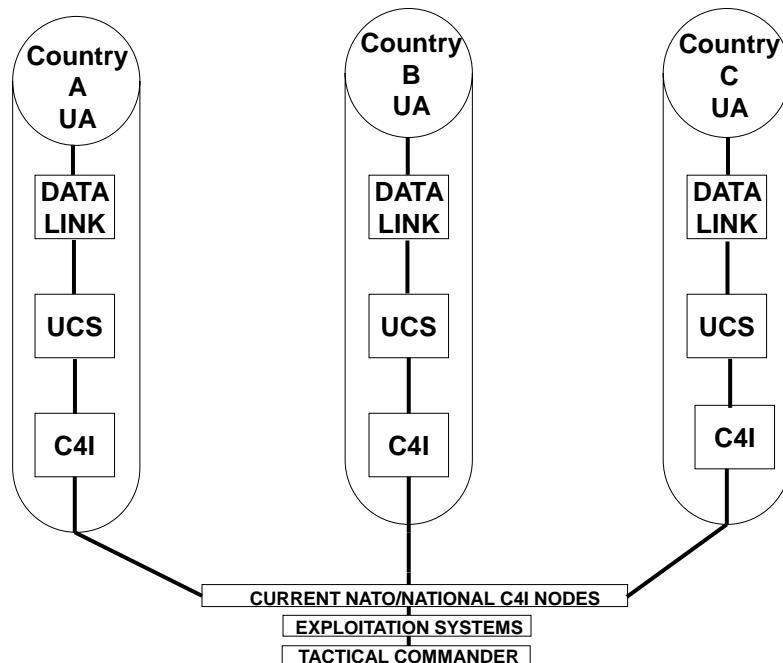
2. The Launch and Recovery element is unique to its UA. The UCS accommodates this vehicle specific uniqueness via its Vehicle Specific Module (VSM) as defined in Section 3, UCS Functional Architecture.

### 2.2 CURRENT STATUS OF UAS INTEROPERABILITY

1. Current UASs are mostly “stove pipe” systems. They utilize unique data links, communication protocols and message formats for communication between UCS and UA and

the UCS and external C4I Systems. As a result, the dissemination of sensor data is mostly via indirect means, (e.g., from UCS to an exploitation system to the user). Current UAS Operations in Joint NATO Operations are illustrated in Figure 3 - 2.

2. The illustrated UASs all utilize unique data links and UCS as well as unique data/message formats for communication between the UA and the UCS and also the UCS and the C4I Nodes. Dynamic joint cooperative operations require near real time tasking/re-tasking and dissemination of reconnaissance data to support the Tactical Commander, which the “stove-pipe” UASs may not support.

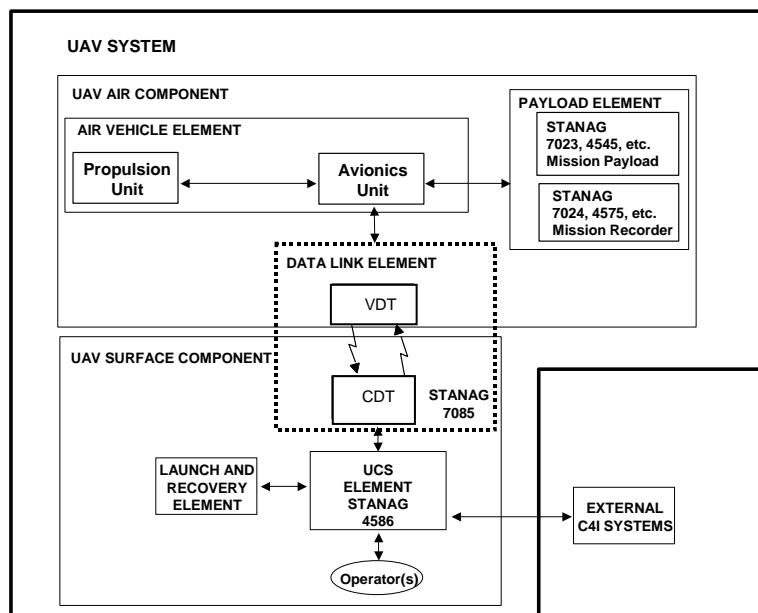


**Figure 3 - 2. Current UAS Operations Example**

### 2.3 LEVELS OF INTEROPERABILITY

1. The following list defines the Levels of Interoperability for STANAG compliant UASs:
  - Level 1: Indirect receipt of UA related data
  - Level 2: Direct receipt of ISR/other data where “direct” covers reception of the UA data by the UCS when it has direct communication with the UA.
  - Level 3: Control and monitoring of the UA payload in addition to direct receipt of ISR/other data
  - Level 4: Control and monitoring of the UA, less launch and recovery
  - Level 5: Control and monitoring of the UA (Level 4), plus launch and recovery functions
2. Level 2 monitoring and Level 3 controls are divisible by payload for an UA where there is more than one payload located onboard the UA. Level 4 interoperability is for the UA alone, and does not include payload control that is specified as Level 3 control. A CUCS controlling both the UA and its payload is exercising Level 3 and Level 4 control.

3. The interoperability levels defined above can be enabled through the standardisation of interfaces between the UAS elements and between the UCS and external C4I Systems. This can be accomplished if the overall System Architecture is also standardised to the extent that it accommodates the implementation of these standard interfaces. In order to achieve interoperability, the UCS Architecture and interfaces shall support the appropriate communication protocols and message formats for legacy as well as new UASs [UCS 0004]. In addition, Level 2 and above (Level 2, 3, 4, and 5) interoperability requires the use of a Control Data Terminal (CDT) that is interoperable with the Vehicle Data Terminal (Vehicle Data Terminal), (e.g., connectivity between the CDT and VDT is prerequisite for Level 2,3,4 and 5 interoperability).



**Figure 3 - 3. UAS Interoperability Architecture**

4. As illustrated in Figure 3 - 3, there are already a number of existing or emerging Standardization Agreements (STANAGs) that are applicable to UASs. They provide standards for interoperable data link (STANAG 7085), digital sensor data between the payload and the UA element of the data link (STANAG 7023, 4545, 4607, 4609), and for on-board recording device(s) (STANAG 7024, 4575).

5. Currently, there is no standard that defines the interfaces between the UCS and the UA (including launch and recovery functions) via the CDT. Although STANAG 5500, ADatP-3, defines a catalogue of standard messages for tasking and status reporting, there is no standard/agreement as to which specific messages and fields should be used by UASs. In addition, there are no standards/agreements as to the type of information that a UAS operator should be presented nor for defining a system operator's required levels of proficiency.

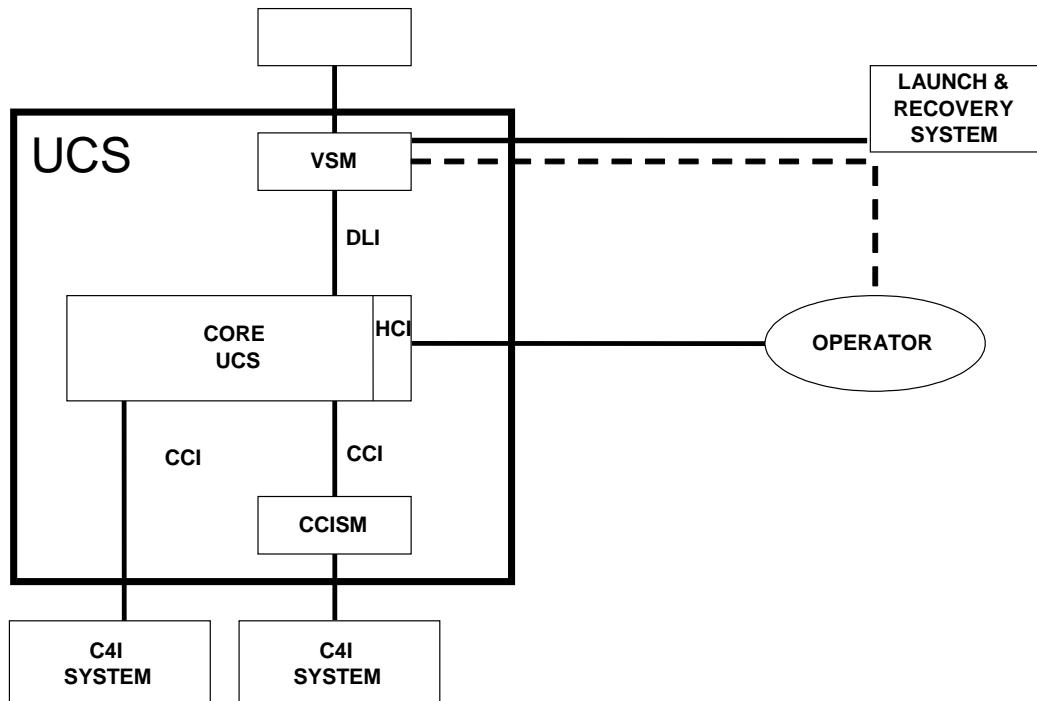
6. STANAG 4586 provides the standardisation of these interfaces. UASs, which are compliant with STANAG 4586, including the referenced STANAGs and standards, will enable interoperability at Level 2 or above. For Level 1 or 2 systems that use digital imaging payloads and STANAG 7085 compliant data links, only the NIIA standards are required, regardless of whether the surface component is a UCS or other ISR exploitation facility. The interface requirements (messages or display parameters) to achieve a given interoperability level are identified in Chapters 3-6.

7. Thus the approach to enabling the desired level of UA interoperability is based on compliance with existing standards or establishing new standards for:

- A data link system(s) that provides connectivity and interoperability between the UCS and the AV(s). The data link system(s) shall accommodate legacy as well as future systems [UCS 0005]. STANAG 7085, Interoperable Data Links for Imaging Systems, specifies a data link system that would provide the required connectivity and interoperability. Users that require encryption should reference work being done for data links by NAFAG Air Group IV and NATO International Military Staff (IMS) for interoperable encryption standards. A standard for a secondary or “back up” data link for UASs requiring one, or for use in tactical UASs not requiring the capability of a STANAG 7085 Data Link is not currently available and needs to be developed.
- Format for payload/sensor data for transmission to the UCS via the data link and/or for recording on the on-board recording device. STANAG 7023, Air Reconnaissance Primary Imagery Data Standard, with addition for non-imagery sensors, (e.g., Electronic Support Measures (ESM)), STANAG 4545, NATO Secondary Imagery Format, STANAG 4607, NATO GMTI Format, and STANAG 4609, NATO Digital Motion Imagery Format provide standard formats for transmitting payload data to the UCS or for storage on the on-board recording device.
- Recording device for on-board recording of sensor data, if required, STANAG 7024, Imagery Air Reconnaissance Tape Recorder Standard, and STANAG 4575, NATO Advanced Data Storage Interface (NADSI), specify standard recording devices and formats for wideband tape and other advanced media (e.g. solid state, RAID) recorders, respectively.
- UCS interfaces with the data link system (e.g., DLI); UCS interface with command and control systems (e.g., CCI); and HCI top level requirements for a UCS to support the UAS operators. STANAG 4586 defines the UCS Architecture and interface requirements.
- Although beyond the scope of this STANAG, operational guidelines or standards that define the minimum level of operator proficiency needed to operate a given UA at the desired LOI are also required.

### 3 UCS FUNCTIONAL ARCHITECTURE

- The UCS Functional Architecture required to support interoperability among future and legacy UASs is illustrated in Figure 3 - 4, UCS Functional Architecture.



**Figure 3 - 4. UCS Functional Architecture**

- This architecture establishes the following functional elements and interfaces:

- Core UCS (CUCS)
- Data Link Interface (DLI)
- Command and Control Interface (CCI)
- Vehicle Specific Module (VSM)
- Command and Control Interface Specific Module (CCISM)

3. This STANAG is not an attempt to define a detailed design or implementation for the CUCS other than specifying that the functional architecture accommodate the integration of the DLI and CCI and recommending that it follow applicable NATO STANAGS and guidelines for software. Lastly, because of changing technology, this STANAG does not define a specific Common Operating Environment (COE) but only specifies that the Operating Environment supports/integrates the specified network/transport protocols and supports the specified user applications.

4. Future, as well as legacy UASs, will be enabled for interoperability through compliance with this architecture and the relevant STANAGs. The DLI shall support legacy as well as future UAs and all UA technologies (e.g., fixed wing, rotary wing, etc.), and all UA operational purposes (surveillance, reconnaissance, and combat) [UCS 0006]. Future UASs should utilize a STANAG 7085 compliant data link system. For those that do not (future as well as legacy

systems), a VDT compatible CDT shall be provided in order to achieve Level 2 and above interoperability [UCS 0007].

5. In similar fashion, the CCI interface shall support legacy as well as future C4I systems (e.g., Allied Command and Control System (ACCS) [UCS 0008]. Thus, the interface between the Core UCS and the External C4I nodes shall be compatible with the communication system infrastructure utilized to support the external tasking and sensor data dissemination [UCS 0009]. This will be accomplished by using the communication standards identified by the NATO C3 Technical Architecture's (NC3TA's) NC3 Common Standards Profile (NCSP) as specified in Section 4. The NC3TA is intended to provide an overall framework for NATO communications. All future communications and information systems used in NATO are to conform to these standards.

6. The concept of a Vehicle Specific Module (VSM) function is introduced which provides the unique/proprietary communication protocols, interface timing, and data formats that the respective UA require. The VSM will also provide any necessary "translation" of the DLI protocols and message formats to the unique UA requirements. Since the VSM may be unique to each UA, the UA manufacturer would generally provide it. If the data links utilized in the UAS are not STANAG 7085 compliant (such as a low band link providing beyond line-of-sight connectivity (e.g., SATCOM data link), then the CDT associated with the non-compliant data link must be provided and interfaced with the UCS via the VSM DLI function or the capability to receive and process the DLI specified Data Link Control and Status messages should be incorporated in the CDT. The VSM function can be hosted on the UA and/or on the ground. Critical (hard) real time functions and interfaces shall be implemented via the VSM function [UCS 0010]. Near real time functions and interfaces may be implemented via the CUCS or VSM function, based on data latency requirements.

7. When a new UA is introduced into a pool of interoperable UASs, it may be necessary to introduce and validate a new corresponding VSM function into each existing UCS. This would be necessary only if the newly introduced vehicle requires VSM functionality in the ground portion of the system. If, however, the existing UCS includes a 7085 compliant CDT and incorporates the data link management functions defined by STANAG 4586, and if the newly introduced UA implements DLI messages directly and includes a 7085 compliant VDT, then a separate ground based VSM is not required.

8. The CCISM provides a function similar to the VSM, that is, the encapsulation of the CCI data and any translation required to be compatible/interoperable with the physical communication links between the UCS and the C4I systems. The CCISM can be hosted on and collocated with the UCS or by and with the connecting C4I node. The UCS Architecture shall make provision for the integration of a CCISM [UCS 0011].

9. The UAS operator should be provided a standard set of parameters that the operator can use to operate/monitor the UAs that have been assigned to him. This includes his interface with the Controlling Air Management Authority. Although it is not necessary for different STANAG 4586 compliant UCSs to have identical displays, it is mandatory that the CUCS meets the HCI requirements specified in Chapter 6. To facilitate this it is recommended that the HCI Guidelines in the Standard Related Document (SRD) AEP-84.1, STANAG 4586 Implementation Guideline Document be followed in the development of the CUCS.

10. The DLI and CCI shall be implemented using messages [UCS 0012]. In addition to supporting the generic message sets defined in Chapters 4, the CUCS shall be capable of supporting a "remote display" capability [UCS 0013]. The remote display capability supports the control and monitoring of "vehicle specific" information from the VSM, on the CUCS, for which there is no available generic interface. Services, which are installed on the CUCS in an unaltered state that are compatible with identified operating systems, to support this "remote

display" capability are identified in Chapter 4. The framework for the information exchange will allow for information to be able to move from one process to another on the same platform, between processes on different platforms, and even between different software products and operating systems.

11. The VSM developers are free to determine the method of implementation to exchange the required information between the CUCS and the VSM using the identified services. This approach focuses on information exchange in a manner that effectively displays UA specific status information and provides for effective control over the UA's specific functionality.

### **3.1 CORE UCS REQUIREMENTS**

1. The CUCS shall provide a user interface that enables the qualified UA operator to conduct all phases of a UA mission [UCS 0014]. It shall support the requirements of the DLI, CCI, and HCI [UCS 0015]. The CUCS should provide a high resolution, computer generated, graphical user interface that enables a qualified UA operator the ability to control different types of UAs and payloads.

2. Depending on the appropriate LOI and the payloads supported in the respective UAS, the CUCS should provide:

- The functionality and capability to receive, process, and disseminate data from the UA and payload; perform mission planning; monitor and control the payload; monitor and control the UA; and monitor and control the data links
- An open software architecture to support additional future UA and payload capabilities
- The UA operator with the necessary tools for computer related communications, mission tasking, mission planning, mission execution and monitoring, data receipt, data processing, and data dissemination
- The capability to host the VSM, and CCISM functions

### **3.2 DATA LINK INTERFACE (DLI)**

The DLI interface between the CUCS and the VSM element of the UAS is defined in Chapter 4. It will enable the CUCS to generate and understand specific messages, detailed in Chapter 4, for control and status of UA and payloads. This standard message set and accompanying protocols have been developed to be UA and payload class (e.g., EO/IR) independent. In addition the DLI specifies the mechanism for the processing and display of vehicle specific messages.

### **3.3 COMMAND AND CONTROL INTERFACE (CCI)**

1. The CCI interface between C4I systems/nodes and the CUCS is defined in Chapter 5.

2. The standard message set and accompanying protocols have been selected to be C4I system/node independent and to avoid placing additional requirements on the C4I system. The UCS provider and respective C4I user of the UAS should jointly identify the CCISM functionality required to provide UCS compatibility with the specific C4I system. Chapter 5 specifies the protocols down to the message content and format level. The networks and communications used to support the CCI Interface shall be NC3TA compliant [UCS 0016]. The NC3TA is intended to provide an overall framework for NATO communications that provides for interoperability among military command, control and communications systems. The NC3TA strategy has been developed to achieve interoperability, maximize the exploitation of commercial off-the shelf (COTS), and reduce the proliferation of non-standard systems. All future communication and information systems used in NATO will conform to these standards.

### **3.4 HUMAN COMPUTER INTERFACE (HCI)**

The HCI (Chapter 6) establishes the operator display and input requirements that the CUCS shall support [UCS 0017]. Chapter 6 specifies the requirements levied upon the CUCS, and does not impose any design requirements on human factors (HF) and ergonomics, (e.g., number of displays, manual controls, switches etc.). Chapter 6, while not specifically defining the format of the data to be displayed, identifies the requirements that the CUCS shall provide in order for the qualified UAS operator(s) to effectively operate the UAS [UCS 0018]. The HCI requirements also address the display and operator interactions that are imposed on the CUCS by the CCI and DLI.

## **4 UCS COMMUNICATION AND INFORMATION TECHNOLOGY PROTOCOLS AND STANDARDS**

1. UA and C4I systems should be capable of interoperating across a routed network of multiple sub-networks, in which the UA is seen as a terminal element (or terminal sub-network) of the whole network. This will allow the physical components of the UA and C4I systems to be anywhere on that network. The electronic exchange of information between UCS and the C4I systems shall be in accordance with the NATO Command, Control, Communication (NC3) Technical Architecture (TA), Volume 4, NC3 Common Standards Profile (NCSP), Annex 4 of AC/322(SC/5)WP/31(REV 1) [UCS 0019].

2. The NCSP is a single profile containing the emerging and mandatory standards and profiles of standards for these systems, their communications and computers, and their interfaces with other (NATO or National or other relevant Civilian) systems to support critical combined/joint interoperability in NATO missions, including the Combined Joint Task Force (CJTF) concept. The NCSP applies to all NATO command and control information system (C2IS) and management information system (MIS) systems, including their internal and external interfaces, which produce, use, or exchange information electronically.

3. The NCSP specifies the minimum set of communication and information technology standards to be mandated for the acquisition of all NATO command, control and communication (C3) systems. In order to assist planners and developers of future C3 systems and major upgrades to existing C3 systems, it also contains a set of emerging standards. Future NATO C3 systems are expected to support both combined and joint operations, and thus national commitments to the appropriate mandatory standards specified in this document will also significantly contribute to the achievement of the degree of interoperability required between NATO and national C3 systems for such objectives. The degree of interoperability needed to achieve the desired goal will be determined by operational requirements and stipulated in the applicable CONOPs.

4. In this scenario, it is important to note that different interoperability levels may be required to achieve internal interoperability between NATO systems than those required for external interoperability between NATO systems and national systems. The standards selection focuses on mandating only those standards critical to external interoperability, and is based primarily on commercial open system technology, which has strong support in the commercial marketplace. Where a system is to be implemented utilizing certain services, it is essential that it adopts the relevant standards mandated in the NCSP; (e.g., if a service/interface is required, it should be implemented in accordance with the associated mandated standard(s)). Specification and usage of other standards, if required beyond those identified in the NCSP, shall be additive, complementary, and non-conflicting with NCSP mandated standards [UCS 0020]. Legacy standards, when necessary, can be implemented as necessary on a case-by-case basis, in addition to the mandated NCSP standards. Emerging standards are standards required to capitalize on new technologies. It is expected that emerging standards will be elevated to mandatory status when implementations of the standards mature and national consensus is reached.

5. The NCSP document organizes these standards into the eleven service areas defined by NC3TA, NATO Technical Reference Model, Volume 2:

- User Interface
- Data Management
- Data Interchange
- Graphics
- Communications
- Operating Systems

- Internationalisation
- System Management
- Security
- Distributed Computing
- Software Engineering

## **4.1 DATA INTERCHANGE/COMMUNICATIONS PROTOCOLS AND STANDARDS**

### **4.1.1 Data Interchange Services**

For Data Interchange services, at a minimum, the following NCSP mandated standards shall be implemented in the UCS to achieve interoperability:

#### **4.1.1.1 Geographical [UCS 0021]**

- Digital Geographic Information Exchange Standard (DIGEST Version 1.2a), STANAG 7074:1998.
- Digital Terrain Elevation Data (DTED) Geographic Information Exchange Standard, STANAG 3809.
- Digital Feature Analysis Data (DFAD).
- World Geodetic System - 84 (WGS-84), Mil-STD-2401.

#### **4.1.1.2 Communication Services [UCS 0022]**

For Communications service area, at a minimum, the following NCSP mandated standards shall be implemented in the UCS to achieve interoperability:

##### **4.1.1.2.1 Internet Protocol (IP) (IPv4 (RFC 791, 792, 919,922, 1112)) / IPv6 (RFC 2460-4, 2375, 2236).**

The UCS Architecture will adhere to the IP version selected by the wider defence community within which it is integrated. In the near-term, systems will need to support the current version of IP [IPv4, RFC 791]. In the longer term, as digitisation progresses, it is possible that the new version of IP [IPv6, RFC 1883] will be adopted by the military to overcome perceived weaknesses in IPv4. IPv6 increases the available address space, reorganizes the protocol headers and improves support for security, throughput, latency, error rate and cost.

##### **4.1.1.2.2 Transport Control Protocol (TCP) (IETF STD 7) RFC 793 (TCP)**

1. The Transport Control Protocol (TCP) [RFC 761] provides a connection oriented reliable byte stream service. TCP is a bi-directional protocol, which has no concept of messages. Any framing has to be added at the application level. TCP contains an acknowledgement scheme which makes it reliable (bytes are delivered correctly and in order) and which implements flow control.
2. The TCP/IP protocols were selected since they can provide consistent end-to-end network and transport communications compliant with NATO-wide digitisation initiatives.

##### **4.1.1.2.3 User Datagram Protocol (UDP) IEN 88, RFC 768, 1122**

The User Datagram Protocol (UDP) offers only a minimal transport service non-guaranteed datagram delivery and gives applications direct access to the datagram service of the IP layer. UDP is used by applications that do not require the level of service of TCP or that wish to use communications services (e.g., multicast or broadcast delivery) not available from TCP.

#### **4.1.1.2.4 Hypertext Transfer Protocol (HTTP) Version 1.1, IETF RFC 2616**

Hypertext Transfer Protocol (HTTP) should be the main protocol used for web browsing. Web browsing provides a common and powerful mechanism for sharing information. HTTP and applications associated with the use of HTTP are used to index, access and transfer processed information. The ability to search the web server can be provided using COTS applications. A C4I user needs a Web browser (e.g., Netscape or Internet Explorer), the Uniform Resource Locator (URL) of the page and communications connectivity to access the information.

#### **4.1.1.2.5 File Transfer Protocol (FTP), IETF, RFC 959**

File Transfer Protocol (FTP) should be used to transfer processed information. It can be used in support of HTTP to transfer files, but needs additional support for providing an index to the information stored on the file server. Once the file has been transferred to the C4I system it is then the responsibility of the C4I to provide applications to process the file.

#### **4.1.1.2.6 Network Time Protocol (V3), April 9, 1992, NTP (RFC-1305)**

1. The Network Time Protocol (NTP) is a client/server relationship that exists between the CUCS and the VSM (in the air or ground). This paragraph does not attempt to provide an in-depth response to the NTP explanation. For the definition, see RFC 1305 as well as Sun Microsystems NTP related information. This paragraph provides an overview of the planned NTP Client/Server capability that the CUCS will use to control and maintain the VSM clock.

2. It will be required that the CUCS be provided a UTC reference source for the NTP server daemon.

3. There are two solutions to synchronizing the time using NTP. The solution recommended here is the xntp option (vs the ntpdate). An ntp.conf file will be required to provide configuration information required by the NTP server daemon.

4. Within the NTP protocol, the designation of the NTP client and server is embedded as part of the NTP protocol initialization process. This process is defined at the lower layers of the operating system and is transparent to the application layer.

5. The end result of the NTP initialization process is that the client and server can be designated to the CUCS or VSM.

6. For a detailed explanation of this process, please see RFC 1305.

7. The NTP time server will use UDP to communicate with the clients. There is no overhead associated with the protocol because it is connectionless. It will not interfere with TCP/IP communications. This level of communication will not be required to be documented in the STANAG DLI.

8. This protocol provides 10 millisecond accuracy with a 1 millisecond resolution.

### **4.2 STANDARDS FOR OPTIONAL FUNCTIONALITY**

If it is desired to implement additional service areas (e.g., data interchange), and classes within these service areas (e.g., video and audio interchange) into the UCS, the NCSP mandated standards should be used in implementing these services.

### **4.3 COMPLIANCE WITH OTHER STANAGS**

While STANAG 4586 is mandatory to enable UA command and control interoperability, the following ISR interface standards are required to address interfaces among the various horizontal and vertical architectures of ISR, and include interfaces that use both physical (e.g., wired, tape, etc.) and electromagnetic links:

- 3809 - Digital Terrain Elevation Data (DTED) Geographic Information Exchange Standard
- 4545 - NATO Secondary Imagery Format
- 4559 - NATO Standard Image Library Interface (NSILI) (If interface with Image library is desired)
- 4575 - NATO Advanced Data Storage Interface (NADSI) (If advanced storage is required)
- 4607 – NATO GMTI Data Format (Emerging Standard)
- 4609 – NATO Digital Motion Imagery Standard
- 4633 – ELINT Common Message Format (ECMF) (draft)
- 5500 - NATO Message Text Formatting System (FORMATS) ADatP-3 Build 11
- 7023 - Air Reconnaissance Primary Imagery Data Standard
- 7024 - Imagery Air Reconnaissance (Digital Tape Storage) (If tape storage is required)
- 7074 - Digital Geographic Information Exchange Standard (DIGEST Version 2.1)
- 7149 – NATO Message Catalogue (NMC) – APP-11

To enhance UA interoperability and flexibility, it is recommended that the UCS should also be compliant with the following STANAGs:

- 3377 AR (Edition 6) – Air Reconnaissance Intelligence Report Forms
- 4250 - NATO Reference Module for Open Systems Interconnection
- 7085 - Interoperable Data Links For Imaging Systems
  - Digital Point to Point Annex of STANAG 7085 (compatible with Common Data Link (CDL)/Tactical Common Data Link (TCDL) specification)

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## 1 INTRODUCTION

### 1.1 SCOPE

1. Allied Engineering Publication (AEP)-84 Volume I Chapter 4 specifies the detailed requirements for interfacing the CUCS to a Vehicle Specific Module (VSM). This interface is designated as the Data Link Interface (DLI) throughout this document.

2. Chapter 4 is intended to allow NATO nations to enable UA interoperability between any compliant CUCS and any compliant UAS (through its VSM) by specifying a standard set of messages and data formats for the interface while at the same time providing support for handling vehicle-specific data needs.

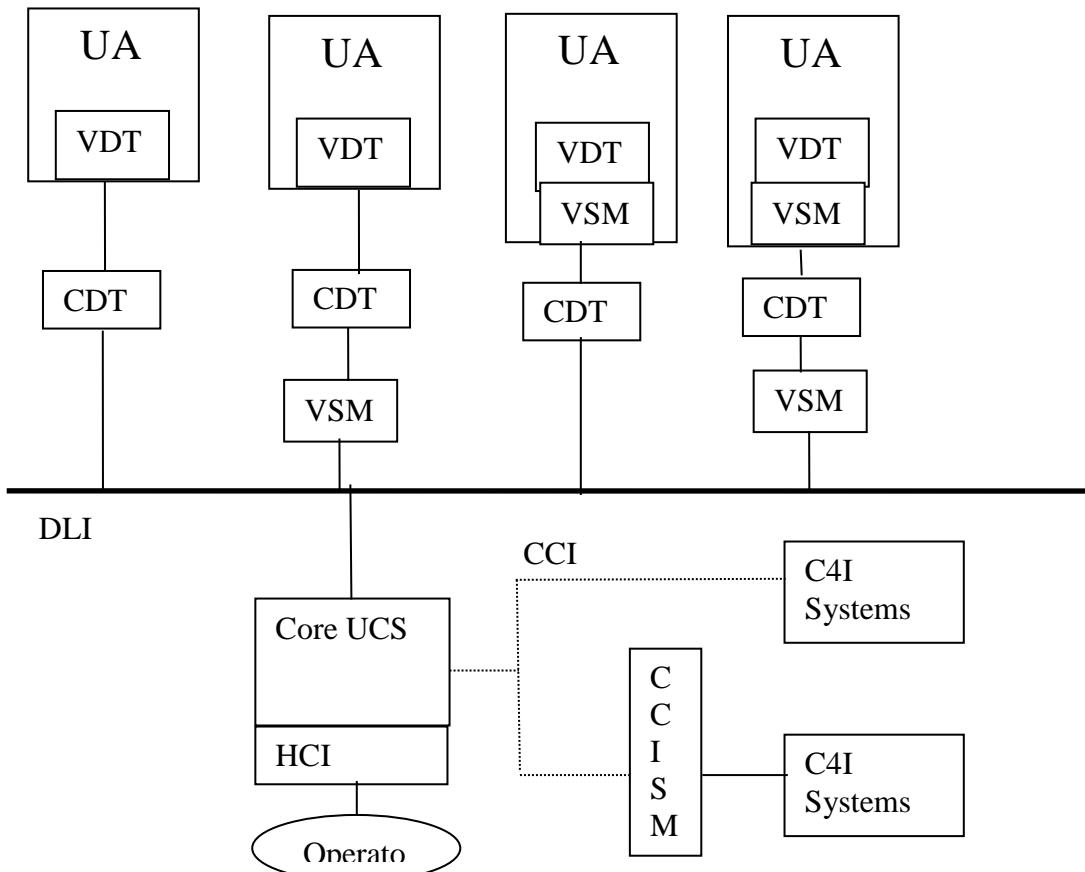
### 1.2 CHAPTER 1 OVERVIEW

This chapter defines the DLI element of the UCS. The DLI provides a common set of messages and mechanisms for handling vehicle and payload specific messages. Chapter 1 is divided into the following sections:

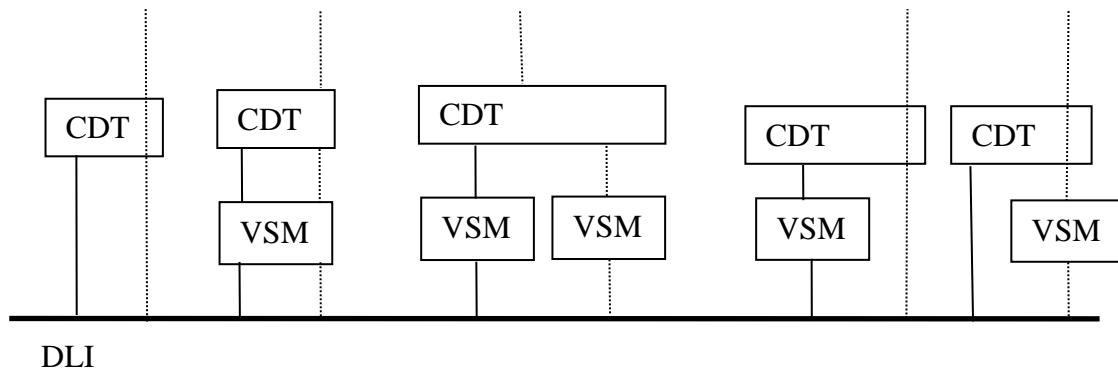
- Section 1 Introduction
- Section 2 System Functional Requirements By Mission Phase
- Section 3 Message Distribution Standard
- Section 4 Message Formats
- Section 5 Miscellaneous Interfaces

### 1.3 DLI GENERAL OVERVIEW

1. A wide range of UA and control system requirements have been considered in establishing the DLI message set. The DLI shall be the interface between the UA/data link and the CUCS element [DLI 0001]. DLI provides standard messages and formats to enable communication between a variety of UA and STANAG 4586 compliant UA control systems. This relationship, or architecture, is presented in Figure 4 - 1.

**Figure 4 - 1: DLI Role in the UA/UCS Concept**

2. In Figure 4 - 1 there are four UAs. The UAs support three different levels of DLI as its native language. An UA that totally supports the DLI interface does not require a separate VSM. An UA may partially support the DLI messages and require a VSM to provide the remaining DLI interface functionality. In the extreme case the UA may not be capable of supporting any of the DLI messages and the VSM would provide all of the DLI functionality. The majority of this standard refers to a VSM, but in the case where the DLI functions are native to the UA the VSM requirements for interfacing to the DLI and the test requirements shall be assigned to the UA [DLI 0342].



**Figure 4 - 2: DLI Role in the CDT/UCS Concept**

3. Figure 4-2 addressed the Control Data Terminal (CDT) DLI interface. To show the functional flow the UA DLI messages are shown as a separate line from the CDT DLI messages. As with the UA, the CDT may understand the DLI messages and not require a separate VSM. This could be true even if the UA required a VSM of its own. The CDT could require a VSM and the UA may not require one. Both the UA and the CDT could both require a VSM and this could be supported by either a single physical VSM or two separate VSMs. The majority of this standard refers to a VSM, but in the case where the DLI functions are native to the control data link the VSM requirements for interfacing to the DLI and the test requirements shall be assigned to the data link [DLI 0343].

4. Requirements assigned in this standard to a VSM can be performed in the UA or CDT, in which case all the requirements assigned to the VSM shall be assigned to the UA or CDT as required [DLI 0344].

5. Each VSM shall perform the function of translating or converting UA specific data formats into DLI-compliant messages [DLI 0002]. Each UA type has a potentially unique VSM (generally provided by the UA manufacturer). The location of the VSM function may be located in the UA and/or with the UA control system. The CUCS shall not contain real-time processes that are required to support the UA and CDT operation [DLI 0003]. In the case of systems using a data link that is not compliant with STANAG 7085 (e.g., BLOS/SATCOM), the VSM CDT function shall serve as an isolating interface that allows the UA system CDT interface to become STANAG 4586 compliant without requiring modifications to the UA or the data link [DLI 0004].

6. The CUCS shall generate and understand common UA and payload messages using the DLI [DLI 0005]. The development of a standard message set and protocol for communication between the UA/data link and the CUCS function is key to establishing an interoperable CUCS Architecture. These messages as defined in this document are UA and payload independent.

7. The CUCS and UA/Control Data Terminal communicate with each other via "messages" as the primary method of transferring information between these two components. This messaging structure has the objective of passing UA control and status information between the CUCS and UA/CDT without creating dependencies between the two components. Messages are used to pass a generic set of data between the CUCS and the UA/CDT, and this generic data may be acted upon by both the CUCS and UA/CDT (local host machine). This methodology allows the CUCS to act upon data originating at the UA/CDT, and then transmits the data to an independent location.

8. The secondary method of communication between the CUCS and the UA/CDT is the use of "services" to pass information between the two components. The services allow the UA/CDT to affect the HCI on the CUCS, much like a web browser accesses web pages for locally displaying data residing on a remote host. The UA/CDT-driven displays include the display of data that is not part of any standard "data" message sets, and allow the operator to interact with an UA through the UA/CDT to select options, modes of operation, and other vehicle-specific actions. The CUCS has no capability to alter or use the content of the "remote displays" on the local machine.

9. Defining the DLI generic message structure for the UA/CDT/CUCS communication is the purpose of this chapter. Existing message protocols and standards are used for the "remote services" on the UA/CDT to facilitate the process of defining the vehicle specific interface. The vehicle specific mechanisms for transferring messages between the CUCS and UA/CDT are outlined in a later section of the chapter.

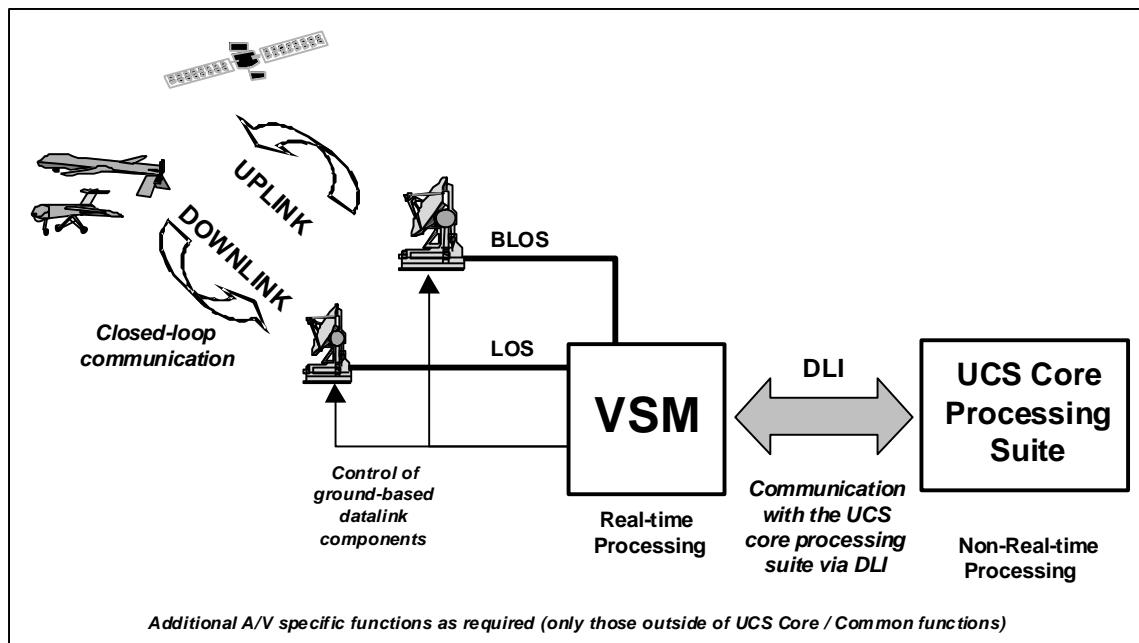
10. The message set defined in this chapter includes control and status messages for the following:

- Unmanned Aircraft
- Payloads
- Data Links
- Cautions and Warnings

11. The message set contains UA data that is vehicle and payload independent, such that the interface standard is not required to change to accommodate a particular UA or payload. In addition the message set includes a capability to have the DLI generate system specific displays through the UCS HCI.

12. The DLI has two major components. The first component is a generic set of messages designed to be vehicle and payload independent that support CUCS functionality, and common UA data needs. The second component is a mechanism to support communication of vehicle specific information, from the UA/CDT to the CUCS, to remotely display vehicle-specific information. The "services" methodology allows new vehicle specific elements, and even new vehicles, to be added to a UCS system without having to modify the CUCS software components.

13. The VSM function can reside on the same, different, or even remote hardware with respect to the CUCS, as long as sufficient bandwidth for the message interface (including sensor data) can be provided. The intent of this chapter is not to specify hardware, but to specify in detail the DLI such that interoperability can be achieved.

**Figure 4 - 3: Role of the VSM**

14. Figure 4 - 3 provides another view of the relationship among the CUCS, the VSM, and the DLI. In this figure, note that real time processing has been allocated to the VSM which maintains closed loop control with the UA. In addition, it provides a command and status interface with the data link subsystem. The CUCS, in contrast, performs its function in "non-real time". This is to say that the system is not bound to a particular latency specification but to a maximum latency for the various functions and messages as specified in Table 4-5 in Section 4 below. This is a critical distinction that presumes a reasonable level of automation in the system. For those functions requiring real time interaction with a human operator, the interfaces to the system will be directly through the VSM.

#### 1.4 VEHICLE SPECIFIC MODULE FUNCTIONS

1. In the UCS System Architecture, the Vehicle Specific Module (VSM) shall be responsible for the following functions where they are not part of the UA or CDT:

- Translating data from the representation used by the CUCS (DLI defined messages) to vehicle specific representations and vice versa [DLI 0006].
- Acting as a repository and server for vehicle-specific data (such as vehicle configuration and performance limitations) and methods (such as routines for updating vehicle-specific operator displays) [DLI 0007].
- Packing and unpacking data link data to optimise transmission bandwidth when necessary [DLI 0008].
- Managing interfaces required to control and monitor data link(s) operation [DLI 0009].
- Managing interfaces required to control and monitor launch and recovery (L/R) systems associated with the respective vehicles [DLI 0010].

2. A VSM is an UA specific function(s) that services the DLI interface between the CUCS elements and the UAS. The VSM shall insulate the CUCS from UA specific interface peculiarities by maintaining closed-loop control and communication with the UA and its payload(s) following the UA's specific protocols, timing and encoding methods [DLI 0011]. The

VSM shall also provide direct control of the data link(s), if any, associated with the UA [DLI 0012].

3. To accomplish these functions, in most cases, the VSM will reside as a component of the CUCS system. It is envisaged that the VSM will be an embedded processing element that interprets data link control/status messages, interfaces with the Control Data Terminal (CDT) to initialise and operate the data link, packs data for transmission to/from the UA, and performs ground-based real time control functions (such as loop closures for controlling landing of a UA onto a moving landing platform, emergency recovery, etc.). The VSM is also envisioned as the element of the CUCS System Architecture that provides a migration path for legacy UASs to achieve STANAG 4586 compliance with minimal impact to the UA design.

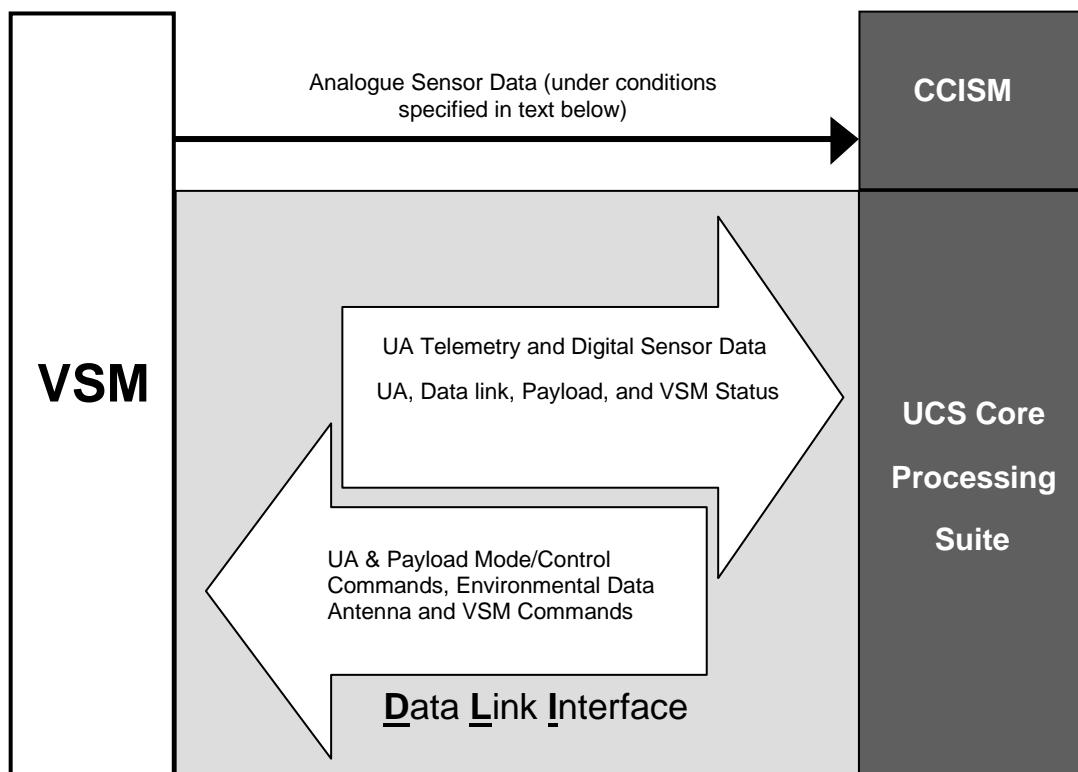
## 1.5 INTERFACES

### 1.5.1 Physical Interfaces

1. The DLI (notionally depicted in Figure 4 - 3) can actually consist of multiple physical interfaces. At least one full duplex bi-directional digital data interface shall provide a communication pathway for the following:

- Commands to the UA, payload, data link and VSM [DLI 0019]
- Environmental data to the UAS elements [DLI 0020]
- Status from the UA, payload, data link and VSM [DLI 0021]
- Digital payload data from the UA - depending on data rate requirements and available bandwidth, digital payload data may require a separate physical interface to be included in a specific DLI implementation [DLI 0022]

2. Voice communication with ATC, if required, is outside the scope of this STANAG.



**Figure 4 - 4: High-Level Depiction of DLI Interface Content**

3. This STANAG envisions an all-digital medium for data; analogue data interfaces are not within the scope of the DLI. The VSM shall provide analogue to digital conversion (“frame grabbing”) services when imagery or other sensor data is transmitted from the UA in analogue format [DLI 0023]. Under this circumstance, to avoid unnecessary translation from analogue to digital and back to analogue when a C4I system requires analogue video, the VSM shall provide a dedicated physical interface for displays or for external feeds (through a CCISM) [DLI 0024].

4. The physical interface between the CUCS and the VSM can differ depending upon where the VSM is physically located. The VSM can either reside on the ground as part of the UCS and/or as a subsystem in the UA. When the VSM interfaces with the CUCS, the physical interface shall support the TCP/IP and UDP/IP protocols (e.g., Ethernet (IEEE 802) – 10Base2, 10BaseT, 100BaseT, 1000BaseT, fibre, etc.) [DLI 0025]. The VSM then interfaces to the data link and will incorporate the standards as documented in STANAG 7085. When the VSM resides in the UA, the interface to the VDT portion of the data link is defined in STANAG 7085. The CDT/VSM shall support a DLI-compliant interface to the CUCS [DLI 0027].

### **1.5.2 System Latency and Real-time Interface Considerations**

1. In vehicle control systems, designers typically should consider all sources of latency to ensure satisfactory handling qualities and system stability. This is particularly true in a UAS employing manual control of the aircraft. In such systems, a critical area of concern is the total latency between the UA and the operator controls and displays, as this attribute will strongly influence system performance under manual control.

2. In the UCS Architecture, real-time UA and data link control functions (when required) are managed by the VSM. The CUCS performs non-real-time processing, and the DLI specifies neither fixed nor maximum latency in exchanges between the VSM and the CUCS. Though message delivery may be guaranteed, latency is not, and consequently real time performance is not guaranteed for signals passing through the DLI. In general, the DLI physical medium will have sufficiently high data rates to support control and display data needs at reasonable rates for human interaction. However, because the DLI medium may potentially be shared among a number of VSMs simultaneously, messaging rates and overall bandwidth may tend to be variable and should not be relied upon.

3. Several approaches are possible in constituting a UCS-compliant system:

- The VSM performs all real-time functionality autonomously, and data interchange needed to support controls and displays are designed to be of a non-real-time nature. In this approach, controls and displays presented to the user are not dependent upon any particular latency. Changes in latency are managed such that they do not affect readability of displays or performance of controls. For instance, integrators in a control stick filter may use dynamic integration time to avoid changes in the timing of data delivery across the DLI.
- The system is designed to take advantage of measured throughput available through the DLI and in the CUCS using near real time techniques resulting in no significant delays, but special provisions are incorporated to sense and accommodate excessive latency. This approach is somewhat risky in that the CUCS hardware configuration is variable and some configurations may not support a given function or approach.
- Certain manual controls and displays are critical and will be serviced with no noticeable delays (isochronous) process. In this case, processing is performed in the VSM and device interfaces are managed directly by the VSM without

passing through the DLI logically or physically. This approach might be used by legacy systems and UAs that do not have the sophistication to perform autonomous operations.

4. In the case where the VSM is housed in the UA, the CDT shall have a DLI-compliant interface and autonomously perform real time control of the data link [DLI 0029].

## **1.6 TAILORING BY INTEROPERABILITY LEVEL**

The applicability of various message sets varies with the interoperability level. For example, vehicle steering commands are inappropriate at Levels of Interoperability (LOI) 1-3 (as defined in Chapter 3). The CUCS shall filter messages and respond to, as well as issue, only those messages that are applicable at the currently active LOI [DLI 0030]. A correspondence table is provided in Table 4 - 5, Message Summary and Properties, defining applicability of each message.

## **1.7 PHILOSOPHY OF INTERFACE DATA REPRESENTATION**

The approach adopted for creating the Interface Data Representation for a message is outlined in the following sub-sections. The general requirements for the generation of a message are identified and each message is defined in detail in Section 4. It is recommended that these requirements be complied with whenever possible in the specification of new messages.

### **1.7.1 Byte Ordering, Bit Numbering and Floating Point**

1. The byte ordering shall be most significant byte first (big-endian) [DLI 0031]. Bit numbering starts at zero for the least significant bit, also known as LSB 0.

Most Significant Byte (MSB)								Least Significant Byte (LSB)							
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

**Figure 4 - 5: Bit Numbering Example (2-Byte Field)**

2. Floating point numbers shall be as defined in IEEE Standard for Binary Floating-Point Arithmetic, ANSI/IEEE Standard 754-1985, Institute of Electrical and Electronics Engineers, August 1985 [DLI 0032].

### **1.7.2 Units**

1. Due to the variety of possible UASs envisioned in the future, and the international nature of the interoperability planned for the UCS, the philosophy for developing the message types in the DLI shall be to use metric (SI, ISO/IEC 80000) units wherever possible [DLI 0033]. The DLI is a system-internal representation only between the CUCS and the VSM, and therefore any conversions required for human readability or familiarity (e.g., m/s to knot) can be performed at the appropriate user interface.

2. All earth-fixed position references shall be expressed in the latitude-longitude system with respect to the WGS-84 ellipsoid in units of radians using double precision floating-point numbers [DLI 0034]. Representations in other systems, such as Universal Transverse Mercator (UTM), shall be converted at the point of use [DLI 0035]. All times shall be represented in Universal Time Coordinated (UTC) in seconds since Jan 1, 1970 using IEEE double precision floating point numbers [DLI 0036].

3. All angular parameters shall be expressed in radians [DLI 0037]. Bearings shall be measured clockwise from true north [DLI 0038]. Elevation shall be referenced from local horizontal, positive toward the zenith [DLI 0039].

4. Data quantities, where specified in megabits (or megabytes), shall be specified as 1,000,000 bytes (or bits) instead of  $2^{20}$  (1024x1024) [DLI 0040]. (Reference: Amendment 2 to International Standard IEC 60027-2: Letter symbols to be used in electrical technology - Part 2: Telecommunications and electronics (Jan 1999).)

### **1.7.3 Approach to Packaging Command Data**

The general intent for packaging data was to strike a balance between minimizing the overhead associated with message headers while maximizing the modularity of the message set. In addition, the further intent was to categorize data into logical messages combinations, such as inertial data vs. body-relative data vs. wind-relative data when referring to vehicle state. Command and status data are kept in separate message groups to separate uplink messages from downlink messages. Data for which some sort of acknowledgement receipt is generally required are separated from status information requiring no acknowledgement. Finally, an attempt is made to keep data from appearing in multiple messages to avoid the possibility of inconsistencies.

### **1.7.4 Concept for Display of Vehicle Specific Data**

1. There is a requirement to control and monitor an UA through the generic DLI message set, identified in Section 4 of this document. The generic message set provides the capability for a qualified operator to control and monitor a significant percentage of UA functions through the use of generic control panels and dialogs. The VSM is required to support all the formatted DLI messages that are applicable to the UA for which it has been developed. All data elements contained in the generic message set that are applicable to the UA are therefore available to the CUCS, and are able to be displayed as required in the generic displays, and allow for control of the generic UA functionality by a qualified operator.

2. There are control and monitoring requirements that an UA may require that are not provided for through the generic DLI message set, as they are not considered to be generic to all UAs. There shall, therefore, be a capability to provide additional operator displays and controls for these vehicle specific functionalities [DLI 0041]. This capability is identified as the "remote display" capability or "vehicle specific" mechanism.

3. The DLI enables the VSM to display information on the CUCS, for example:

- Vehicle specific displays show status
- Vehicle specific displays allow the selection of options and modes of control
- Vehicle specific displays are independent of the CUCS capabilities, except for specified generic services (e.g., a change in VSM capability should not be limited by the CUCS capability)
- Vehicle specific displays are controlled by the CUCS
- Vehicle specific display information is passed through the DLI interface
- Vehicle specific data intent should be maintained

4. It is important to note that the CUCS does not know the intended usage of the vehicle specific parameters, and is not able to manipulate the vehicle specific parameters. The vehicle specific data is "remotely displayed" on the CUCS displays. The content and arrangement of these displays is controlled by the VSM, and the displays are therefore tailored to a specific UA. The VSM process is controlling specific UA functionality and providing status information for these specific processes through these remote displays.

#### 1.7.4.1 Vehicle Specific Display Services

For generating the remote displays according to the requirements identified in this section of the document, the following services shall be supported [DLI 0042]. The display formats are determined by the VSM. The following services are the minimum requirement of the CUCS platform to support interoperability with all VSMs and the maximum allowable for the VSM platform that shall be supported for interoperability [DLI 0043]:

- Web Browser Services shall be compatible with:
  - <http://www.w3.org/TR/REC-CSS1>  
Cascading Style Sheets, level 1  
W3C Recommendation 17 Dec 1996, revised 11 Jan 1999
  - <http://www.w3.org/TR/REC-DOM-Level-1>  
Document Object Model (DOM) Level 1 Specification  
Version 1.0  
W3C Recommendation 1 October 1998
  - <http://www.w3.org/TR/html4>  
HTML 4.01 Specification  
W3C Recommendation 24 December 1999
  - <http://www.ecma-international.org/publications/files/ecma-st/Ecma- 262.pdf>  
Referred as to Jscript or JavaScript  
ECMA Script 262 or ISO/IEC 16262 3<sup>rd</sup> Edition December 1999 [DLI 0044]
- Java applet mechanism shall be compatible with:
  - Sun Microsystem Compliant JRE V1.1 or superior version [DLI 0045]  
The Java applet mechanism shall be integrated with the Web Browser Service [DLI 0345].
- The X-Server Services shall be compatible with:
  - X11R6 X Window System Release 6  
<http://www.x.org> [DLI 0046]

#### 1.7.4.2 Vehicle Specific Display Requests and Presentation

1. Vehicle Specific (remote) displays are initiated by the CUCS making a request to the VSM, through the mechanisms provided by the generic formatted DLI message set.
2. The Remote Display philosophy is that the generic control panels shall be displayed to the operator prior to requesting the remote displays [DLI 0047], and the CUCS shall have been authorized control of the specified UA [DLI 0048]. To initiate the transmission of the remote displays from the VSM, the CUCS shall transmit Message #1202, CUCS Resource Report, to the VSM [DLI 0049]. The VSM shall transmit the required vehicle specific control panels after the reception of the CUCS Resource Report Message [DLI 0050]. The CUCS Resource Report provides the VSM with the details of where to transmit and locate the remote displays.
3. As identified previously, the CUCS is required to contain a browser, an x-windows display capability, and a Java run-time environment in accordance with Section 1.7.4.1 Vehicle Specific Display Services. The positive control over the remote services shall be a CUCS responsibility, to include the security settings for these services [DLI 0051]. It is a CUCS responsibility to ensure adequate services are selected for the remote displays. As an example, for the web browser service this means that the selected browser must have adequate security

settings to disallow un-requested windows from popping up on the system; potentially have the capability to hide the close button; and disallow the resizing of the remote display windows, etc.

4. Vehicle specific displays can be used to request additional vehicle specific displays. When these additional vehicle specific displays are required, they shall be initially displayed within the resource allocated by Message #1202 or within the window from which it was requested [DLI 0052]. A second method of an operator initiating remote displays from the VSM is through the use of the STANAG 4586 "Subsystem State Report Reference" field of Message #1001, Subsystem Status Detail Request. These processes ensure that the operator must request all remote panels for display thus maintaining positive control over the displays.

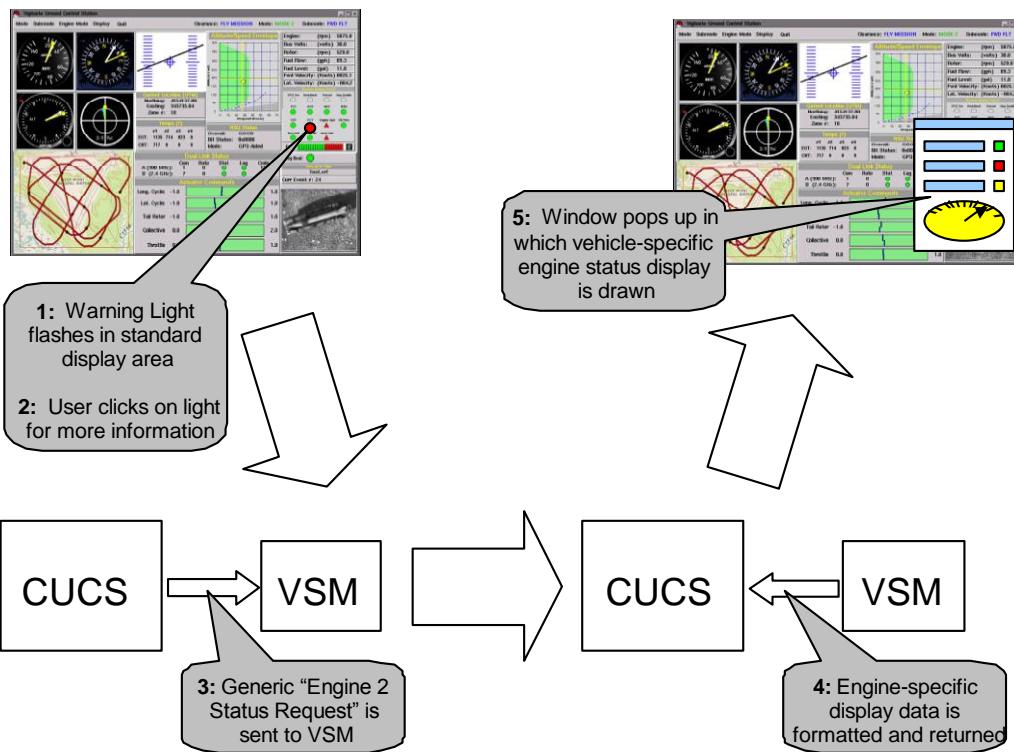
5. Remote Displays shall not be initiated by the VSM via message #1100 or #1101 until the CUCS Resource Report has been transmitted to the VSM [DLI 0053].

6. VSM shall use remote services that transmit remote displays to the CUCS in accordance with Message #1202 CUCS Resource Report [DLI 0054]. This provides a second level of security to ensure remote displays are displayed where expected on the CUCS displays, and not covering critical data.

7. Refer to section 4.1.7.3 Message #1202: CUCS Resource Report for additional requirements.

8. Figure 4 - 6 below provides a representation of how the remote displays are generated using the subsystem reference report. The generic displays will identify a warning condition and any requirement to place a vehicle-specific display on the CUCS display screens. The additional information will usually be information specific to the UA and not provided through the generic message set.

9. In Figure 4 - 6 a generic warning indication is provided to the operator in the generic displays identifying a problem with Engine #2. An enunciator flashes to indicate to the operator that an engine warning state exists, and identifies a more detailed display is available to the operator. The operator may request the additional information by clicking on the enunciator, which then generates a request to the VSM through the generic message mechanism, requesting the detailed Engine #2 status information. The VSM then transmits the required information to the CUCS through the vehicle-specific mechanism implemented for the UA. The CUCS then displays this information to the operator in a controlled manner.



**Figure 4 - 6: Typical Scenario for Generating Vehicle-Specific Displays**

10. The vehicle specific mechanism provides the capability to create CUCS displays for a specific UA, without having to present data that is specific to a particular vehicle in a set of generic displays, thus eliminating unnecessary clutter from the displays. This capability also eliminates the need for the CUCS to carry around large libraries of display functions for many different types of UAs that would be difficult to keep current. In this concept, the VSM is responsible for providing the information necessary for detailed system management functions, and that information remains hidden from the operator until needed.

### 1.7.5 Vehicle, Data Link, and CUCS Identification (ID) Numbers

1. Each message shall contain fields that specify the identification (ID) numbers for the UA and CUCS that are communicating with one another [DLI 0055]. Some messages also contain the Data Link ID and the VSM ID. The VSM ID is provided in those messages which may be required to be transmitted between a CUCS and a VSM in advance of a connection to an UA, payload or a data link. The purpose of these numbers is to uniquely identify any entity in an arbitrarily formed system combining multiple CUCS, UAs, and data links all potentially interacting with VSMs which may control zero or more vehicles at a time. A VSM that controls zero UAs might require connection to a CUCS in advance of receiving an UA handoff from another STANAG 4586 ground station.

2. ID numbers shall be formed as 4-byte numbers [DLI 0056]. The first (most significant) byte shall be the Owning ID for that CUCS or UA [DLI 0057]. The Custodian of STANAG 4586 may assign Owning IDs and identify an associated authority for the Owning ID at its discretion. Two-hundred and fifty five (255 (hexadecimal FF)) shall be reserved [DLI 0059]. The remaining three bytes shall be assigned according to procedures and protocols identified and maintained by the authority associated with the Owning ID to assure unique ID numbers for each in-service device [DLI 0060].

3. The following table assigns an integer for each Owning ID. Please contact the Custodian of 4586 for future assignments or changes.

Owning ID	Assigned Number
BELGIUM	002
BULGARIA	003
CANADA	004
CZECH REPUBLIC	005
DENMARK	006
ESTONIA	007
FRANCE	008
GERMANY	009
GREECE	010
HUNGARY	011
ICELAND	012
ITALY	013
LATVIA	014
LITHUANIA	015
LUXEMBOURG	016
NETHERLANDS	017
NORWAY	018
POLAND	019
PORTUGAL	020
ROMANIA	021
SLOVAKIA	022
SLOVENIA	023
SPAIN	024
TURKEY	025
UNITED KINGDOM	026
UNITED STATES	027
<b>PfP</b>	
ALBANIA	100
ARMENIA	101
AUSTRIA	102
AZERBAIJAN	103
BELARUS	104
CROATIA	105
FINLAND	106
GEORGIA	107
IRELAND	108
KAZAKHSTAN	109
KYRGYZSTAN	110
REPUBLIC of MOLDOVA	111
RUSSIAN FEDERATION	112
SWEDEN	113
SWITZERLAND	114
TAJIKISTAN	115
TURKMENISTAN	116
UKRAINE	117

Owning ID	Assigned Number
UZBEKISTAN	118
<b>Other</b>	
Israel	119

**Table 4 - 1: Owning ID Table**

4. Each STANAG 4586 compliant UA, data link, and CUCS shall be assigned a unique system ID within its respective type [DLI 0062]. Among the three types (UA, data link, or CUCS), devices of different types may have an identical ID number, but this should be avoided where possible. If sharing of numbers across types is used, it shall be according to the member nations' procedures [DLI 0063].
5. In cases where the entity is not an "Unmanned Aircraft", for example, aerostats, mast-mounted sensors, and "strap-on" self-contained mission packages, the entity is treated as if an UA (albeit with very limited or non-existent LOI 4/5 functionality). These entities, or platforms, shall be assigned Vehicle IDs by the Owning ID authority [DLI 0485].
6. In this document and in the accompanying Implementation Guide, ID numbers will be represented as individual hexadecimal bytes separated by colons (e.g., 10:4E:F3:06). ID number FF:FF:FF:FF shall be reserved as a broadcast ID referring to all vehicles or all CUCS [DLI 0064], and FF:00:00:00 shall be reserved as a null ID [DLI 0065]. 0.xx.xx.xx shall be reserved for logical IDs that describe a logical UA that does not have a specific instantiation [DLI 0346]. These logical IDs are defined by the VSM manufacturer.
7. Each STANAG 4586 compliant device shall be responsible for maintaining a permanent record of its ID number and being able to provide its ID number upon request [DLI 0066]. For UAs and data link systems not possessing assigned IDs, the VSM employed to interface with that system shall maintain a correspondence between devices and assigned ID numbers [DLI 0067].
8. A VSM receiving a CUCS Authorisation Request Message (Message #1, see Section 4.1.1.1) with a broadcast request ID will respond with at least one VSM Authorisation Response Message (Message #21, see Section 4.1.1.3), and more than one if more than one UA/payload entity type/subtype combination is controllable through the VSM. When a VSM is not connected to an UA/payload the vehicle ID field shall be filled with a distinct logical vehicle ID [DLI 0068]. A distinct logical ID shall be reported up to the number of vehicle entities that the VSM can control/monitor [DLI 0347].

## 2 SYSTEM FUNCTIONAL REQUIREMENTS BY MISSION PHASE

The DLI data content is determined by the functional requirements of the CUCS and VSM needs to communicate with one another. The set of common functions and vehicle/payload specific functions from which data elements of the DLI are described can be found in detail in Section 4. Functionality is categorised by the phase of a UA mission. Within each mission phase, functionality is identified as either common (meaning consistent across all vehicle and payload types) or vehicle-specific. In most cases, vehicle specific functions are those that vary either in procedure or in data content and will require interaction between the CUCS and the VSM to how those functions are to be performed. The functions within each of the phases of the UA mission are described in the table below.

Mission Phase	Common Functions	Vehicle-Specific Functions
Pre-flight	Interoperable Mission Planning Mission Plan / Verify Upload Process. Common Built-In-Testing (BIT). Mission Go / No-go	Vehicle Availability. Flight Plan Validation. Lost Link Strategy. Vehicle Specific BIT. Payload Configuration Validation & BIT checks. Pre-flight Checkout and Initialisation. Downloaded Mission Plan Validation. UCS/Vehicle Communications. Clocks Synchronization (UA & UCS).
Takeoff	Local ATC Communications. Checklists Complete Validation. UCS/UA Communications Validation. Takeoff Clearance Acquisition.	Ground Traffic Pattern/Plan Execution. Ground Operations Safety Constraints Monitoring. Launch. Abort Sequence Management.
Ingress / Egress	Mission Execution Monitoring. Active Emitters (e.g., radar) Activation.	UA Vehicle-Specific Handoff Data Management.
Prime Mission Area (Target Area)	Generic Payload Control. Payload Data Handling. Mission Execution Monitoring. System Status Summary Information.	Detailed System Status Monitoring. Payload Specific Control & Monitoring. Payload Specific Data Handling
Approach / Landing	ATC Coordination. Recovery Procedures Execution.	Approach Flight path Acquisition and Maintenance. Landing Sequences Execution. Taxi Sequence Execution. Shutdown / Safing Checklists & Procedure Execution.
Post-Mission Reporting	Mission Execution Summary Report.	Vehicle Maintenance Status Report.
Phase-independent In-flight	UA handoff among UCSS Management. Mission Execution Monitoring. Mission Phase Monitoring. General Health & Status Monitoring (H&SM) and Warning. Dynamic Flight Path Replanning. Multiple (Possibly Different) Aircraft Control. Data Recording / Buffering. CDT Control, Status, & Initialisation.	Detailed Health & Status Monitoring. Lost Link Strategy Execution and Monitoring. Operator Control Modes Management. CBIT (Continuous Built-In-Tests) Across Subsystems. Differential GPS Corrections.

**Table 4 - 2: Common vs. Vehicle Specific Functions by Mission Phase**

### 3 MESSAGE DISTRIBUTION STANDARD

#### 3.1 INTRODUCTION

1. A primary goal of the Core UA Control System (CUCS) is to provide a set of functions that are common among many different vehicle platforms and different C4I systems. Some of the functions of the CUCS include providing connectivity with various national C4I systems, providing standard controls and displays for qualified users with an appropriate training background to operate differing UA platforms, providing standard operations and maintenance displays, and providing a common basis for battle space awareness and mission management. However, to perform the full range of its functions in a manner that is truly interoperable among different vehicle platforms and varying external ground-based systems, the CUCS should have a consistent, common way of obtaining input from and providing output to external systems. A common “language” for expressing key information has to be established that is both robust enough to support a full range of functions as well as flexible enough to adapt to a rapidly changing technology environment. The DLI in particular should address this problem, as it shall serve as the point of contact between vehicle specific systems and the CUCS [DLI 0069].

2. A common approach to providing inter-process (and inter-processor) communications is a technique known as “message passing.” In a message passing system, data serving a common purpose is aggregated into structured packages that are commonly understood by both sender and receiver. A system for transporting messages, assuring proper delivery, and managing allocation of resources, as well as a standard definition for how data is packaged and formatted, is all that is required. If a commonly available library of functions is provided for these services, robust integration can be achieved at relatively little extra cost and with very little interaction among disparate development teams. Properly defined, this technique of formatting, packing, transmitting, parsing, and interpreting information can be as flexible, detailed, and robust in application as needed. If defined as an open standard, it can assure interoperability among independently developed systems.

3. This section provides a definition for message content and handling methods within the CUCS. In general, inter-process communications shall be implemented as message transactions in which data is sent in half-duplex mode from one process to another [DLI 0070].

4. Data communications within a given process may be managed by whatever means the developer chooses, consistent with sound software engineering practices. Interoperability between tasks within a process is entirely within control of the developer because performance constraints may not always permit messaging system overhead.

#### 3.2 REQUIREMENTS

A message handling structure shall, as a minimum, consist of the following elements:

- Definition of structured data format and content for standard information [DLI 0072].
  - For information supporting common functions within the CUCS that is supportable across multiple system types, a set of messages were developed that define in detail the variables, values, data formats, and locations within the message to permit efficient handling of the information according to a consistent scheme. This structure should not be burdened by vehicle or system specific “baggage”, and shall encompass only that which serves a common purpose [DLI 0443].
- A means for transmitting unstructured data [DLI 0073].
  - Some information will have to be exchanged between UA and ground processing elements that support platform-specific functionality. A generalized messaging scheme shall be capable of passing data for which

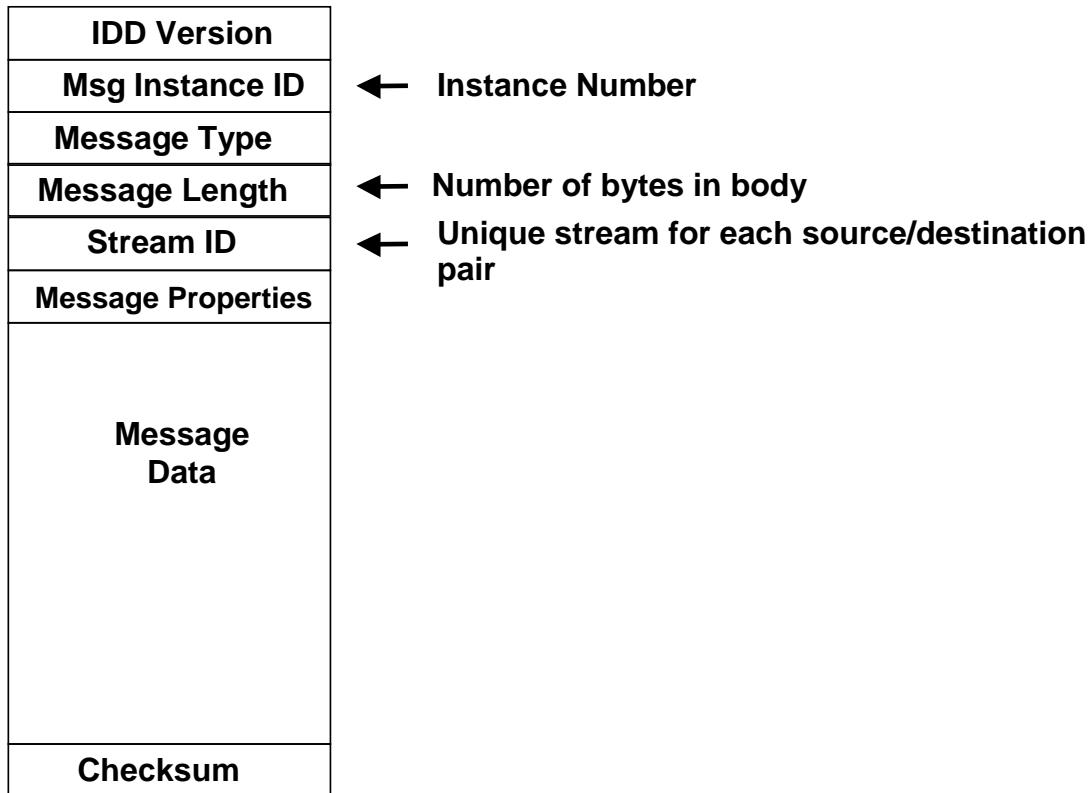
the format and content of the message are unknown to the CUCS but through which the data should pass [DLI 0444].

- A means of managing transport of messages of any type [DLI 0074].
  - A variety of message types will have to be supported, and a means for distinguishing among types for proper processing shall be defined [DLI 0445]. Furthermore, UAs will have multiple channels for transporting information among system components, and the messaging system has to be capable of managing messages passing among multiple source-destination pairs across multiple communications channels.
- A means for managing multiple (possibly redundant) channels of communications among multiple processes [DLI 0075].
  - This requirement has several different “flavours.” Data may need to be replicated across multiple channels for the sake of redundancy. Data may need to be passed from one process to a sole recipient (private communication) or from one process to many (broadcast communication). To assure interoperability and portability among environments, the means of transporting and routing messages shall be independent of the physical transport mechanism used (e.g., Ethernet, dedicated serial port, Unix sockets) and transport protocol (either TCP/IP or UDP, depending on the port used) [DLI 0076].
- A means of cataloguing an expanding set of message types and tracking changes needed to support evolving technology [DLI 0077].
  - UA technology is rapidly evolving, and a static system definition will soon become obsolete. Therefore, provision shall be made for supporting a continually evolving set of message types [DLI 0078]. This catalogue should not only support the definition of the message types, but to be maximally useful it shall also support an open source library of methods for handling new and evolving message types [DLI 0079].

### **3.3 MESSAGE HANDLING APPROACH**

#### **3.3.1 Message Wrapper Information**

1. Each message shall use the message wrapper structure defined in Figure 4 – 7 [DLI 0080]. The header contains information that enables the message handling software to manage transmission and distribution of the messages to the appropriate entities. The footer contains the checksum information that assists identifying transmission errors. The following sections provide a description of each of the data items in the wrapper and its role in the message handling system.



**Figure 4 - 7: Message Wrapper Structure**

2 Special Note: Unless otherwise noted, all header entries described below shall be 32-bit unsigned integers [DLI 0081]. Message Instance may be generated sequentially by an application call to a core library function. The intent is that the message instance ID shall not be reused within a given mission [DLI 0082]. However, because ID utilization rates and mission duration's can vary without bound, the burden is left on the application developer to ensure that any reuse of ID numbers shall not result in ambiguity of meaning for the receiving process [DLI 0083]. (This may be managed, for example, by tagging messages for which reuse may occur with date-time groups).

### 3.3.1.1 Interface Definition Document (IDD) Version

Each message shall contain the version identification of the Interface Definition Document (IDD) from which its structure was defined [DLI 0084]. This version identification shall be placed in a fixed 10-byte field and filled with a null-terminated string of ASCII characters [DLI 0085]. Version identification management shall be used by error checking functions to validate format consistency [DLI 0086]. Table 4-3 shows the current version of the IDD that has been assigned.

STANAG 4586 Document Version	IDD Version Identification
Edition 1	“1”
Draft Edition 2	“2”
Draft Edition 2, Errata 1	“3”
Draft Edition 2, Errata 2	“4”
Draft Edition 2, Errata 3	“5”
Draft Edition 2, Errata 4	“6”
Draft Edition 2, Errata 5	“7”
Edition 2	“8”
Edition 2, Version 1	“9”
Edition 2, Version 2	“10”
Edition 2, Version 3	“11”
Edition 2, Version 4	“12”
Edition 4, AEP-84 Volume I Edition A Version 1	“12”

**Table 4 - 3: STANAG 4586 Document Version**

### 3.3.1.2 Message Instance Identifier

The instance identifier shall uniquely identify every instance of a message of a given type [DLI 0087]. Instance identifiers are used by the system to keep streaming data coordinated, and to identify dropped messages of a given type at the application level. Instance identifier numbers shall not be reused unless other provisions for avoiding identifier ambiguity are provided in the message body [DLI 0088].

### 3.3.1.3 Spare

### 3.3.1.4 Message Type

The message type is the integer value associated with the defined messages types below. Message types shall be numbered sequentially from 1 to n, where n is any integer less than 2000 and represents the highest approved message type [DLI 0089]. It is anticipated that the number of standard message types may grow and that NATO will establish a commission to maintain configuration control on changes to the standard message list. For vehicle specific messages (private), the type numbers shall be between 2,000 and maximum integer [DLI 0090].

### 3.3.1.5 Message Length

1. The length shall be a 32-bit unsigned integer of the number of bytes in the “Message Data” [DLI 0091]. The length shall be any number between 1 and 514 [DLI 0092].
2. Note the UDP protocol under IPv4 has a guaranteed minimum datagram size of 576 bytes that must be supported by all implementations. Subtracting the IPv4 header size of 20 bytes and the UDP header size of 8 bytes, leaves 548 bytes as the maximum amount data that can be sent in a datagram that will guarantee interoperability. Therefore, no message or multi-message datagram shall exceed this data limit [DLI 0348]. Subtracting the message wrapper size of 34 bytes, gives 514 bytes as the maximum message length of a single message with no room for another message in the datagram. Extra care should be taken when packing multiple messages in the same datagram.

### 3.3.1.6 Stream ID

The purpose of Stream IDs is to provide a means for separating flows of data among various processes sharing a single communications channel, and among messages from a given source to multiple destinations. Future capability.

### 3.3.1.7 Message Properties

Message Properties is a Bitmapped field with two subfields. The most significant bit shall be used to indicate whether or not receipt of the message shall be acknowledged [DLI 0507]. When the bit is “1”, an acknowledgement shall be sent: if “0” [DLI 0508], an acknowledgement shall not be sent [DLI 0509]. The next 31 bits are reserved for future use.

No ACK = 0 ACK = 1	Reserved for Future Use
31	30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 09 08 07 06 05 04 03 02 01 00

**Figure 4 - 8: Message Properties**

### 3.3.1.8 Spare

### 3.3.1.9 Checksum

The checksum shall be employed to determine the presence of errors during transmission or handling of messages [DLI 0101]. The checksum shall be a 4-byte unsigned integer and calculated by simple, byte-wise unsigned binary addition of all data contained in the message excluding the checksum, and truncated to four bytes [DLI 0102].

### 3.3.1.10 Wrapper Errors

Messages which contain one or more Wrapper Errors in the Wrapper shall be processed as if not received (i.e., ignored) [DLI 0451]. When a Wrapper Error is identified in a message, the receiving component is not required to process the remaining messages in the datagram. The Wrapper Errors are listed in Table 4 – 4 below.

Error Name	Description	Response
<b>Unsupported IDD</b>	The IDD is set to an unknown or unsupported version.	This DLI message is ignored.
<b>Incorrect Length</b>	The Message Length is set to 0, is greater than 514, or is too large per the size of the datagram.	This DLI message is ignored.
<b>Incorrect Checksum</b>	The Checksum value does not equal the value as defined by Section 3.3.1.9	This DLI message is ignored.

**Table 4 - 4: Wrapper Errors**

## 4 MESSAGE FORMATS

### 4.1 COMMON MESSAGE FORMATS

1. The Message Summary and Properties Table (Table 4-5) and the individual data element descriptions in this section define the required messages that shall be implemented in order to enable the desired UA NATO LOI via the DLI [DLI 0103]. Regardless of vehicle type, there are certain pieces of information that shall be passed regularly from the vehicle to the control system, such as position, attitude, general vehicle health, operating state, etc [DLI 0104]. Control systems will also have a set of common commands and requests for the UA, such as UA or payload operating commands. A primary purpose of this section is to define the set of common message structures for communicating across the DLI between vehicle specific functions and the display and control functions common to STANAG 4586 compliant CUCS implementations. The intent of this chapter is to provide an expandable structure and preliminary set of message definitions that can grow with UA technology.
2. The goal of the common message set is to provide a standard information group required by the CUCS for displays that are common to compliant implementations. Provisions are also made for vehicle-specific message types. Manufacturers may provide any amount of information, whether or not redundant with the common message types, as required by their particular design. However, the common message types shall be supported to guarantee interoperability with CUCS functionality, though not every data element is needed in every application [DLI 0105]. Receiving processes shall perform range checking and properly handle out-of-range values [DLI 0106]. Out of range values, invalid data and non-supported messages shall not cause the CUCS/VSM to be adversely affected [DLI 0107].
3. All the messages detailed in Section 4.1.1 below start with a time stamp. The first field in the DLI Messages is the time stamp indicating the time the message was created, not necessarily the time at which the data was current or accurate. For those data where unknown latency may cause a problem, it is recommended that a “time of validity” also be included in the private message indicating the time of validity of the data.
4. In Table 4 - 5, each message type is identified with several properties, indicated in the rightmost four columns. The first property is labelled “Push/Pull”. Push messages are communicated either periodically or based on some event, but do not require a request to result in sending a message. Pull messages are messages that are communicated in response to a request. This mechanism is used to assure that data link bandwidth is not unnecessarily consumed by unneeded data.
5. The second property (“Source”) identifies the entity from which the message is issued (CUCS or VSM).
6. The third property in the table is LOI. The LOI associates the formatted DLI messages with the level of control the CUCS has over the UA and/or its payloads, and therefore defines the requirement for the implementation of the messages based on a specified LOI. LOI 2 messages are those messages required by a control station to monitor the status of the UA and its payload from which it is receiving data. However, a ground station that is capable of receiving other STANAG compliant digital payload data (e.g., STANAG 4545, 7023, 4609) and the associated auxiliary data (pointing, position) is STANAG 4586 LOI 2 compliant without having to receive the formatted LOI 2 DLI payload messages, e.g., for these ground systems these messages are optional for LOI 2. The entries in Table 4-5 for LOI 2 are, however, mandatory for those systems that have no compliant digital payload data as described above. When an UA has not granted a LOI to a particular CUCS which has discovered the UA, only messages used to discover and configure (#20, 21, 300, 301, 500, 1203, 1300 -1303, 1400-1403) and download a mission plan (800-806, 900) shall be sent from the UA using the monitoring CUCS's CUCS ID [DLI 0486]. All other messages (e.g. #101, 110, 302) shall use

the CUCS ID that is controlling the UA/payload/data link or, if no CUCS is controlling that subsystem, the UA will set the CUCS ID to FF:FF:FF:FF [DLI 0487].

7. LOI 3 messages are for the control of payloads that may be installed onboard an UA. LOI 4 messages are for the control and monitoring of an UA, without the capability to launch or recover the UA. Since Launch and Recovery is vehicle specific, LOI 5 is not implemented via generic STANAG 4586 messages and shall be implemented through the VSM and the vehicle specific mechanism/messages [DLI 0109]. As a result, there are no defined LOI 5 formatted DLI messages. While the table specifies which LOIs must be supported for each type of session, any LOI 2 message may be sent during configuration and setup, even if an LOI session has not yet been granted by the VSM. Note however, that there is one exception in that Message #49 does provide control of a LOI 4/5 field. The VSM will configure Message #49, Select Flight Path Control Mode according to the authorized LOI in that case.

8. In addition, a CUCS authorized at a lower-level LOI may request a specific status message that is normally associated with a higher level LOI through the Generic Information Request or Schedule Message Update Command. If the VSM does not support the higher level LOI, it may choose to ignore the request for a message at the higher level.

9. A "Y" in the table indicates messages that must be supported by the CUCS and may be supported by the UA/Data Link/VSM. A "-" in the table indicates a message that is not sent by the CUCS and may be sent by the UA/Data Link/VSM.

10. The fourth property is captured in the column labelled "Allowable Max Latency (msec)" that defines the maximum transport delay between the HCI and DLI interfaces.

New Msg #	Old Msg #	Description	Push/Pull	Source	LOI			Allowable Max Latency (msec)
					2	3	4 or 5	
<b>SYSTEM ID MESSAGES (Section 4.1.1)</b>								
1	2	CUCS Authorisation Request	Push	CUCS	Y	Y	Y	2,000
2-19	-	Reserved		CUCS				
20	1	Vehicle ID	Push/Pull	VSM	Y	Y	Y	1,000
21	65	VSM Authorisation Response	Push/Pull	VSM	Y	Y	Y	2,000
22-39	-	Reserved		VSM				
<b>FLIGHT VEHICLE COMMAND AND STATUS MESSAGES (Section 4.1.2)</b>								
40	47	Vehicle Configuration Command	Push	CUCS	-	-	Y	2,000
41	62	Loiter Configuration	Push	CUCS	-	-	Y	2,000
42	10	Reserved	-	-	-	-	-	-
43	11	Reserved	-	-	-	-	-	-
44	25	Unmanned Aircraft Lights	Push	CUCS	-	-	Y	500
45	72	Engine Command	Push	CUCS	-	-	Y	500
46	16	Flight Termination Command	Push	CUCS	-	-	Y	500
47	-	Relative Route/Waypoint Absolute Reference Command	Push	CUCS	-	Y	Y	1,000
48	-	Reserved	-	-	-	-	-	-
49	-	Vehicle Operating Mode and Steering Command		CUCS				
49 – 99	-	Reserved		CUCS				
100	3	Vehicle Configuration	Pull	VSM	-	-	Y	10,000

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New Msg #	Old Msg #	Description	Push/Pull	Source	LOI			Allowable Max Latency (msec)
					2	3	4 or 5	
101	5	Inertial States	Push	VSM	Y	Y	Y	1,000
102	6	Air and Ground Relative States	Push	VSM	-	-	Y	1,000
103	7	Body-Relative Sensed States	Push	VSM	-	-	Y	200
104	8	Vehicle Operating States	Push/Pull	VSM	-	-	Y	1,000
105	9	Engine Operating States	Push/Pull	VSM	-	-	Y	500
106	63	Vehicle Operating Mode Report	Push/Pull	VSM	-	-	Y	2,000
107	71	Vehicle Lights State	Push	VSM	-	-	Y	500
108	64	Flight Termination Mode Report	Push/Pull	VSM	-	-	Y	2,000
109	-	Mode Preference Report	Push	VSM	-	-	Y	2000
110	-	From-To-Next Waypoint States	Push	VSM	Y	Y	Y	2000
111	-	Loiter Configuration Report	Push	VSM	Y	Y	Y	2000
112	-	Relative Route/Waypoint Absolute Reference Report	Push	VSM	Y	Y	Y	2000
113 - 199	-	Reserved		VSM				
<b>PAYOUT COMMAND AND STATUS MESSAGES (Section 4.1.3)</b>								
200	26	Payload Steering Command	Push	CUCS	-	Y	-	200
201	31	EO/IR/Laser Payload Command	Push	CUCS	-	Y	-	1,000
202	32	SAR Payload Command	Push	CUCS	-	Y	-	1,000
203	28	Stores Management System Command	Push	CUCS	-	Y	-	1,000
204	33	Communications Relay Command	Push	CUCS	-	Y	-	1,000
205	30	Payload Data Recorder Control Command	Push	CUCS	-	Y	-	1,000
206	49	Payload Bay Command	Push	CUCS	-	Y	-	2,000
207		Terrain Data Update	Push	CUCS	Y	Y	-	2,000
208	-	CBRN Payload Command	Push	CUCS	-	Y	-	1,000
209	-	CBRN Payload Configuration Command	Push	CUCS	-	Y	-	1,000
210	-	CBRN Payload Detailed Info Request	Push	CUCS	Y	Y	-	2,000
211	-	Storage Capacity Management Request	Push	CUCS	-	Y	-	2,000
212	-	CBRN Payload Display Configuration Command	Push	CUCS	-	Y	-	2,000
213	-	Payload Scan Window Configuration Command	Push	CUCS	-	Y	-	2,000
214-299	-	Reserved		CUCS				
300	4	Payload Configuration	Push/Pull	VSM	Y	Y	-	1,000
301	23	EO/IR - Configuration State	Pull	VSM	Y	Y	-	200
302	50	EO/IR/Laser Operating State	Push/Pull	VSM	Y	Y	-	2,000
303	24	SAR Operating State	Pull	VSM	Y	Y	-	2,000
304	27	Stores Management System Status	Pull	VSM	Y	Y	-	1,000

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New Msg #	Old Msg #	Description	Push/Pull	Source	LOI			Allowable Max Latency (msec)
					2	3	4 or 5	
305	34	Communications Relay Status	Pull	VSM	Y	Y	-	1,000
306	29	Payload Data Recorder Status	Pull	VSM	Y	Y	-	1,000
307	48	Vehicle Payload/Recorder Configuration	Pull	VSM	-	Y	-	2,000
308	54	Payload Bay Status	Pull	VSM	-	Y	-	2,000
309	-	CBRN Detection Message	Push/Pull	VSM	Y	Y	-	500
310	-	CBRN Payload Configuration State	Pull	VSM	Y	Y	-	1,000
311	-	CBRN Payload Operating State	Push/Pull	VSM	Y	Y	-	1,000
312	-	Payload Scan Window Operating State	Push/Pull	VSM	Y	Y	-	1,000
313	-	CBRN Payload Detailed Info Response	Pull	VSM	Y	Y	-	2,000
314	-	CBRN Payload Detailed Info Estimate Response	Pull	VSM	Y	Y	-	2,000
315-399	-	Reserved						

**DATA LINK MESSAGES (Section 4.1.4)**

**DATA LINK COMMAND AND STATUS MESSAGES (Section 4.1.4.1)**

400	38	Data Link Set Up Message	Push	CUCS	Y	Y	Y	1,000
401	66	Data Link Control Command	Push	CUCS	Y	Y	Y	2,000
402	68	Pedestal Configuration Message	Push	CUCS	Y	Y	Y	2,000
403	70	Pedestal Control Command	Push	CUCS	Y	Y	Y	2,000
404	-	Data Link Assignment Request	Push	CUCS	Y	Y	Y	2,000
405-499	-	Reserved		CUCS				
500	17	Data Link Configuration/Assignment Message	Pull	VSM	Y	Y	Y	1,000
501	39	Data Link Status Report	Pull	VSM	Y	Y	Y	1,000
502	67	Data Link Control Command Status	Push	VSM	Y	Y	Y	2,000
503	69	Pedestal Status Report	Push	VSM	Y	Y	Y	2,000
504-599	-	Reserved		VSM				

**DATA LINK TRANSITION MESSAGES (Section 4.1.4.2)**

600	12	Vehicle Data Link Transition Coordination	Push	CUCS	-	Y	Y	1,000
601-699	-	Reserved		CUCS				
700	14	Handover Status Report	Push/Pull	CUCS/VSM	-	Y	Y	1,000
701-799	-	Reserved		VSM				

**MISSION MESSAGES (Section 4.1.5)**

800	15	Mission Transfer Command	Push	CUCS/VSM	Y(1)	-	Y	1,000
801	41	UA Route	Push/Pull	CUCS/VSM	Y	-	Y	2,000
802	56	UA Position Waypoint	Push/Pull	CUCS/VSM	Y	-	Y	2,000
803	58	UA Loiter Waypoint	Push/Pull	CUCS/VSM	Y	-	Y	2,000
804	59	Payload Action Waypoint	Push/Pull	CUCS/VSM	Y	Y	Y	2,000
805	60	Airframe Action Waypoint	Push/Pull	CUCS/VSM	Y	-	Y	2,000

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New Msg #	Old Msg #	Description	Push/Pull	Source	LOI			Allowable Max Latency (msec)
					2	3	4 or 5	
806	61	Vehicle Specific Waypoint	Push/Pull	CUCS/VSM	Y	-	Y	2,000
807-899	-	Reserved		CUCS				
900	53	Mission Upload/Download Status	Push	VSM	Y	Y	Y	2,000
901-999	-	Reserved		VSM				
<b>SUBSYSTEM STATUS MESSAGES (Section 4.1.6)</b>								
1000	21	Subsystem Status Request	Push	CUCS	Y	Y	Y	1,000
1001	22	Subsystem Status Detail Request	Push	CUCS	Y	Y	Y	1,000
1002-1099	-	Reserved		CUCS				
1100	19	Subsystem Status Alert	Push	VSM	Y	Y	Y	1,000
1101	20	Subsystem Status Report	Pull/Push	VSM	Y	Y	Y	1,000
1102-1199	-	Reserved		VSM				
<b>GENERAL CONFIGURATION MESSAGES (Section 4.1.7)</b>								
1200	43	Field Configuration Request	Push	CUCS	Y	Y	Y	2,000
1201	55	Display Unit Request	Push	CUCS	Y	Y	Y	2,000
1202	42	CUCS Resource Report	Push	CUCS	Y	Y	Y	2,000
1203	13	Configuration Complete	Push	CUCS/VSM	Y	Y	Y	2,000
1204-1299	-	Reserved		CUCS				
1300	44	Field Configuration Integer Response	Push/Pull	VSM	Y	Y	Y	2,000
1301	45	Field Configuration Double Response	Push/Pull	VSM	Y	Y	Y	2,000
1302	52	Field Configuration Enumerated Response	Pull	VSM	Y	Y	Y	2,000
1303	46	Field Configuration Command	Push	VSM	Y	Y	Y	2,000
1304	-	VSM Services Report Message	Pull	VSM	Y	Y	Y	2,000
1305	-	Field Configuration Unsigned Response	Push/Pull	VSM	Y	Y	Y	2,000
1306	-	Vehicle Steering/Operating Mode Configuration	Push/Pull	VSM	Y	Y	Y	2,000
1307-1399	-	Reserved		VSM				
<b>MISCELLANEOUS MESSAGE TYPES (Section 4.1.8)</b>								
1400	40	Message Acknowledgement	Pull	CUCS/VSM	Y	Y	Y	1,000
1402	57	Schedule Message Update Command	Push	CUCS/VSM	Y	Y	Y	2,000
1403	18	Generic Information Request	Push	CUCS/VSM	Y	Y	Y	1,000
1401, 1404- 1499	-	Reserved						

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New Msg #	Old Msg #	Description	Push/Pull	Source	LOI			Allowable Max Latency (msec)
					2	3	4 or 5	
<b>IFF/SSR COMMAND AND STATUS MESSAGE TYPES (Section 4.1.9)</b>								
1500	35	IFF/SSR Code Command	Push	CUCS	-	-	Y	1,000
1501	36	IFF/SSR Identification of Position Command	Push	CUCS	-	-	Y	1,000
1502	-	IFF Key Control Command	Push	CUCS	-	-	Y	1,000
1503	-	IFF/SSR Bit Command	Push	CUCS	-	-	Y	1,000
1504-1599	-	Reserved		CUCS				
1600	37	IFF/SSR Status Report	Push/Pull	VSM	-	-	Y	1,000
1601-1699	-	Reserved						
<b>RESERVED FOR GENERIC PRODUCT TRANSPORT (Section 4.4 of Attachment 4-3)</b>								
1700-1799		Reserved – See Attachment 4 - 3: Generic Product Transport	Push/Pull	CUCS/VSM				
<b>WEAPONS MESSAGES (Section 4.1.10)</b>								
1800	-	Store Specific Information Request	Push	CUCS	-	Y	-	1,000
1801	-	Transfer Weapons Configuration Data File	Push	CUCS	-	Y	-	1,000
1802	-	Build Store Inventory	Push	CUCS	-	Y	-	1,000
1803	-	Primary Store Control	Push	CUCS	-	Y	-	1,000
1804	-	Abort Release/Launch	Push	CUCS	-	Y	-	1,000
1805	-	Prepare Store	Push	CUCS	-	Y	-	1,000
1806	-	Master Arm Control	Push	CUCS	-	Y	-	1,000
1807	-	Select Weapon Package	Push	CUCS	-	Y	-	1,000
1808	-	Weapon Fire Control	Push	CUCS	-	Y	-	1,000
1809	-	Prepare For Recovery	Push	CUCS	-	Y	-	1,000
1810	-	Fuze Control	Push	CUCS	-	Y	-	1,000
1811	-	Seeker Sensor Control	Push	CUCS	-	Y	-	1,000
1812	-	Weapon Laser Control	Push	CUCS	-	Y	-	1,000
1813	-	Jettison Store	Push	CUCS	-	Y	-	1,000
1814	-	Store Inventory Status Request	Push	CUCS	-	Y	-	1,000
1815	-	Modify Target	Push	CUCS	-	Y	-	1,000
1816	-	Publish Key	Push/Pull	CUCS/VSM	-	Y	-	1,000
1817	-	Fuze Arm Delay From Release	Push	CUCS	-	Y	-	1,000
1818	-	Remote Designator Position	Push/Pull	CUCS/VSM	-	Y	-	1,000
1819	-	Dynamic Weapon Package Control	Push	CUCS	-	Y	-	1,000
1820	-	Dynamic Weapon Package Store Request	Push	CUCS	-	Y	-	1,000
1821	-	Initialize Dynamic Weapon Package	Push	CUCS	-	Y	-	1,000
1822	-	Rack Control	Push	CUCS	-	Y	-	1,000
1823	-	Carriage Control	Push	CUCS	-	Y	-	1,000
1824	-	Secondary Store Control	Push	CUCS	-	Y	-	1,000

New Msg #	Old Msg #	Description	Push/Pull	Source	LOI			Allowable Max Latency (msec)
					2	3	4 or 5	
1825	-	Store Growth Provision	Push	CUCS	-	Y	-	1,000
1826	-	Modify Weapon Loiter Command	Push	CUCS	-	Y	-	1,000
1827	-	GeoZone Control	Push	CUCS	-	Y	-	1,000
1830	-	CUCS Load Out Configuration Response	Pull	CUCS	Y	Y	-	1,000
1831	-	LAR Planning Request	Push	CUCS	-	Y	-	1,000
1900	-	SMS Status	Pull	VSM	Y	Y	-	1,000
1901	-	Inventory Status Response	Pull	VSM	Y	Y	-	1,000
1902	-	Store Inventory Status	Pull	VSM	Y	Y	-	1,000
1903	-	Primary Store Status	Pull	VSM	Y	Y	-	1,000
1904	-	Secondary Store Status	Pull	VSM	Y	Y	-	1,000
1905	-	Weapon Package Status Response	Pull	VSM	Y	Y	-	1,000
1906	-	Weapon Package Status	Pull	VSM	Y	Y	-	1,000
1907	-	Seeker Sensor Track Status	Pull	VSM	Y	Y	-	1,000
1908	-	Seeker Sensor Status	Pull	VSM	Y	Y	-	1,000
1909	-	Weapon Launch Decision Aid Region Report	Pull	CUCS/VSM	Y	Y	-	1,000
1911	-	Fuze Status	Pull	VSM	Y	Y	-	1,000
1912	-	Weapon Laser Status	Pull	VSM	Y	Y	-	1,000
1913	-	Rack Status	Pull	VSM	Y	Y	-	1,000
1914	-	Primary Carriage Status	Pull	VSM	Y	Y	-	1,000
1915	-	Secondary Carriage Status	Pull	VSM	Y	Y	-	1,000
1916	-	Modify Target Status	Pull	VSM	Y	Y	-	1,000
1917	-	Store Growth Status	Pull	VSM	Y	Y	-	1,000
1919	-	Modify Weapon Loiter Status	Pull	VSM	Y	Y	-	1,000
1920	-	GeoZone Status	Pull	VSM	Y	Y	-	1,000
1924	-	Key Status	Pull	VSM	Y	Y	-	1,000
1925	-	Store Specific Information Response	Pull	VSM	Y	Y	-	1,000
1926	-	CUCS Load Out Configuration	Push	VSM	-	Y	-	1,000
1927	-	SMS Secondary Status	Pull	VSM	Y	Y	-	1,000
<b>PRIVATE MESSAGES (Section 4.2)</b>								
2000-Max int.		VSM-Specific Private Message	Push/Pull	VSM-Specific	(2)	(2)	(2)	1,000

**Table 4 - 5: Message Summary and Properties**

NOTE:

(1) Only support request for download / (2) VSM-Specific

11. Note: In the development of AEP-84 Volume I, the messages identified in Table 4-5 have been grouped and numbered according to their functionality (e.g., System ID Messages, Flight Vehicle Command and Status Messages, Payload Command and Status Messages). One of the final changes in this area was re-defining the numbering system so as to assign each functional message group a range of numbers (e.g., Flight Vehicle Command and Status

Messages are in a range of 40 through 199). To facilitate the correlation of this message numbering schema to the previous one that the Custodian Support Team (CST) and the national industrial members supporting the CST are familiar with, Columns 1 and 2 of Table 4-5 provide the necessary information.

12. DLI common messages shall all be transmitted through a port configured for communications using UDP multicast [DLI 0184]. UDP multicast enables multiple processes (VSMs and CUCSs) to communicate with each other on a single IP address and port number. Since UDP does not provide guaranteed delivery, messages requiring acknowledgement of receipt shall be acknowledged using the Message Acknowledgement (Message #1400) [DLI 0185]. Messages designated as "Push" type messages may be communicated without the requirement for acknowledgement. This allows transmission of streaming and ephemeral data (such as periodic vehicle state data) for which retransmit is neither required nor desired. Messages designated as "Pull" type messages are responses to queries and the message is itself an acknowledgement. UDP multicast of these "Pull" type messages makes it possible for multiple CUCSs to remain synchronized with each other and with multiple VSMs by monitoring query/response transactions for vehicles and payloads that are controlled by other CUCSs. However, acknowledgement of receipt of a request to generate a pull-type message may be required if delayed response is an issue. In such cases, the Message Acknowledge bit in the header shall be used to fulfil a requirement for such acknowledgement cases [DLI 0186].

13. The default condition shall be that push-type messages are not acknowledged, and pull-type messages form the acknowledgement for the associated request it answers [DLI 0187].

14. The Payload and Vehicle subsystems have been developed to provide a set of generic messages for common UA payloads, and for the common UA subsystems. A CUCS and/or VSM do not have to support the generic payload messages or the vehicle subsystem messages that do not apply to the systems configuration. However, if one of the generically identified payload or subsystem messages is applicable for the UAS, the identified formatted DLI messages shall be supported [DLI 0189].

15. A generic set of Payload Types has been identified in the Payload Configuration Message (Message #300). The generic DLI messages associated with each of the payload types is identified in Table 4 – 6.

Payload Type	Required Message	LOI	Msg Type
All LOI 2 & 3	Message #300: Payload Configuration	2 & 3	Configuration
EO/IR & Fixed	Message #301: EO/IR Configuration State Message #302: EO/IR/Laser Operating State Message #200: Payload Steering Command Message #201: EO/IR/Laser Payload Command	2 & 3 2 & 3 3 3	Configuration Status Command Command (Modes)
SAR	N/A : Configuration Message Message #303: SAR Operating State Message #200: Payload Steering Command Message #202: SAR Payload Commands	2 & 3 3 3	Configuration Status Command Command (modes)
Disposable (Stores)	N/A : Configuration Message Message #304: Stores Management System Status Message #203: Stores Management System Command	2 & 3 3	Configuration Status Command
Comm. Relay	N/A : Configuration Message #305: Communication Relay Status Message #204: Communications Relay Command	2 & 3 3	Configuration Status Command

<b>Payload Type</b>	<b>Required Message</b>	<b>LOI</b>	<b>Msg Type</b>
<b>CBRN</b>	Message #209: CBRN Payload Configuration Command	3	Configuration
	Message #212: CBRN Payload Display Configuration Command	3	Configuration
	Message #309: CBRN Detection Message	2 & 3	Status
	Message #310: CBRN Payload Configuration State	2 & 3	Status
	Message #311: CBRN Payload Operating State	2 & 3	Status
	Message #313: CBRN Payload Detailed Info Response	2 & 3	Status
	Message #314: CBRN Payload Detailed Info Estimate Response	2 & 3	Status
	Message #208: CBRN Payload Command	3	Command
	Message #210: CBRN Payload Detailed Info Request	2 & 3	Command
	Message #211: Storage Capacity Management Request	3	Command
<b>CBRN Standoff</b>	Message #209: CBRN Payload Configuration Command	3	Configuration
	Message #212: CBRN Payload Display Configuration Command	3	Configuration
	Message #213: Payload Scan Window Configuration Command	3	Configuration
	Message #309: CBRN Detection Message	2 & 3	Status
	Message #310: CBRN Payload Configuration State	2 & 3	Status
	Message #311: CBRN Payload Operating State	2 & 3	Status
	Message #312: Payload Scan Window Operating State	2 & 3	Status
	Message #313: CBRN Payload Detailed Info Response	2 & 3	Status
	Message #314: CBRN Payload Detailed Info Estimate Response	2 & 3	Status
	Message #208: CBRN Payload Command	3	Command

**Table 4 - 6: Conditional Payload Message Groups**

16. A generic set of Vehicle Subsystems has been identified for UASs. If one of these subsystems is installed on an UA, the generic DLI messages associated with the subsystem shall be utilized as shown in Table 4 – 7 and Table 4 – 8 [DLI 0190].

Type	Required Message	LOI	Msg Type
Recorder	Message #307: Vehicle Payload/Recorder Configuration	3	Configuration
	Message #306: Payload Data Recorder Status	2 & 3	Status
	Message #205: Payload Data Recorder Control Command	3	Command

**Table 4 - 7: Conditional Data Recorder Message Group**

Type	Required Message	LOI	Msg Type
Payload Bay	Message #206: Payload Bay Command	3	Command

**Table 4 - 8: Conditional Payload Bay Doors Message Group**

17. A generic set of data link control messages have been defined for STANAG 7085 compliant data links. The messages, identified in Table 4-9, shall be supported if a STANAG 7085 compliant data link is used [DLI 0350]. Support for the data link assignment and status messages (Message #404 and Message #500) shall be supported for all data links, regardless of data link type [DLI 0351].

Type	Required Message	LOI	Msg Type
Data Link	Message #400: Data Link Set Up	2, 3, 4/5	Configuration
	Message #401: Data Link Control Command	2, 3, 4/5	Command
	Message #402: Pedestal Configuration Message	2, 3, 4/5	Configuration
	Message #403: Pedestal Control Command	2, 3, 4/5	Command
	Message #501: Data Link Status Report	2, 3, 4/5	Status
	Message #502: Data Link Control Command Status	2, 3, 4/5	Status
	Message #503: Pedestal Status Report	2, 3, 4/5	Status

**Table 4 - 9: Conditional Data Link Control Message Group**

18. Common message formats covering command and status of other payloads (e.g., electronic countermeasures, weapons delivery, electronic warfare, self-defence payloads) are not currently defined. UA carrying such payloads shall use vehicle specific message mechanisms described above [DLI 0191]. Future revisions of this STANAG will incorporate standard control and status messages for such payloads as they become commonly employed across a variety of UA platforms.

19. Note: In the tables that follow, data types for non-private messages shall conform to the following meanings:

- Character (n) - ASCII character data of “n” bytes in length, which includes the null terminator character [DLI 0192]
- Integer (n) - signed integers, where n is 1, 2, or 4 bytes (negative integers are represented in two's complement) [DLI 0193]
- Float - IEEE format floating point numbers (4 bytes in length) [DLI 0194]
- Double - IEEE double precision floating point numbers (8 bytes in length) [DLI 0195]
- Unsigned (n) - unsigned integers; where n is 1, 2, or 4 bytes [DLI 0196]

20. Note: Private messages may use additional data types not defined above.

21. In addition, data ranges that have “reserved” values shall not be used by a CUCS or VSM [DLI 0197]. Data ranges that have “VSM specific” values may be used by the VSM to support functionality that is not supported by the STANAG defined values. Bit maps are used in certain command messages to allow multiple addressing of the message, such as in the request for subsystem status. Each addressed entity shall accept such a request and may respond with a separate status message for that entity, or as specified in the specific message [DLI 0352]. Bit maps are indicated in the STANAG 4586 where the Units = Bitmapped.

22. Each field in a message has a Unique ID associated with it. Once a field is assigned a Unique ID, that ID remains with the field even if the field is moved within the message or to a new message. The Unique ID provides a message and position independent method to refer to a particular field that will not change if the field is moved.

23. Entries in the Range column of the various DLI message tables only supply a range specification if it differs from the range provided by the Type specification. If there are no range restrictions beyond those implicitly defined by the Type, the range should be expressed as “No Restrictions” (do not leave the entry blank). For example, if the Type is Unsigned 1 and the full range of a 1-byte unsigned integer is supported ( $0 \leq x \leq 255$ ), the Range specification should not be specified. This will remove redundancy in the specification, as well as highlight to developers and testers where restrictions to field values are applicable. Note that this could be further detailed by changing the name of the column to Range Restrictions.

24. Character(n) data types that are restricted to the Printable range shall only contain ASCII character codes in the range of 0x20-0x7E (which includes letters, digits, punctuation marks, the space character and a few miscellaneous symbols) followed by a null character (0x00) [DLI 0525].

#### **4.1.1 System ID Messages**

##### **4.1.1.1 Message #1: CUCS Authorisation Request**

1. This message shall be sent by a CUCS to a VSM or an UA to request a specific LOI connection to the VSM or UA, or to discover a connection(s) to the VSM/UA at an unspecified LOI [DLI 0198]. If the Vehicle ID/VSM ID for the connection is known by the CUCS then the VSM ID/Vehicle ID field shall be filled in by the CUCS [DLI 0199]. Where the CUCS is discovering a connection the VSM ID/Vehicle ID field shall be filled with the broadcast VSM ID/vehicle ID [DLI 0353]. If more than one payload station authorisation is needed with differing LOI(s), this message may be sent multiple times, once for each payload station when the VSM/vehicle ID is known.

2. This message is designed to allow more than one CUCS to control UA/payload functions of a single VSM/ vehicle for a given vehicle ID.

3. A CUCS controlling an UA at LOI 4 or 5 shall maintain UA control until either it breaks the connection, specifically relinquishes control, or is displaced by another CUCS that is asserting override while the current CUCS is not [DLI 0354].

4. A CUCS controlling a payload at LOI 3 shall maintain payload control until it either breaks the connection, specifically relinquished control, or when the CUCS that has LOI 4 or 5 specifically requests control of that payload [DLI 0355].

5. The Controlled Station Mode field shall be filled with “0” for a broadcast request [DLI 0356].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
<b>0001.01</b>	<b>1</b>	<b>Time Stamp</b>	Double	s	See Section 1.7.2
<b>0001.02</b>	<b>2</b>	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
<b>0001.03</b>	<b>3</b>	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5
<b>0001.04</b>	<b>4</b>	<b>VSM ID</b>	Integer 4	None	See Section 1.7.5
<b>0001.05</b>	<b>5</b>	<b>Data Link ID</b>  Identifies the specific data link to process this message.	Integer 4	None	See Section 1.7.5
<b>0001.06</b>	<b>6</b>	<b>Vehicle Type</b>  Identifies the type name of vehicle; numbers to be assigned by STANAG Custodian.	Unsigned 2	Enumerated	0 - 65535 = See Table 4-11
<b>0001.07</b>	<b>7</b>	<b>Vehicle Subtype</b>  Assigned by manufacturer or other configuration authority.	Unsigned 2	None	No Restrictions
<b>0001.08</b>	<b>8</b>	<b>Requested/Handover LOI</b>  Allows request or handover of LOI 2, 3, 4 and 5.	Unsigned 1	Bitmapped	0x01 = LOI 2 0x02 = LOI 3 0x04 = LOI 4 0x08 = LOI 5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0001.09	9	<b>Controlled Station</b>	Unsigned 4	Bitmapped	0x00000000 = UA Platform (Does not include Payload Stations) 0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
0001.10	10	<b>Controlled Station Mode</b>	Unsigned 1	Enumerated	0 = Relinquish/Handoff Control 1 = Request Control 2 = Override Control
0001.11	11	<b>Wait for Vehicle Data Link Transition Coordination Message</b>	Unsigned 1	Enumerated	0 = Don't Wait 1 = Wait for Message

**Table 4 - 10: Message #1: CUCS Authorisation Request**

6. Table 4-11 lists the Vehicle IDs of many current UAs. The Custodian Staff will add to this Table as requested due to systems implementing or experimenting with STANAG 4586. Contact the STANAG 4586 Custodian for the most current Vehicle ID Table.

<b>Vehicle Type ID</b>	<b>Vehicle Name</b>
0	Not Identified
1	BAMS UA
2	Crecerelle
3	Crecerelle GE
4	Eagle-1
5	MQ-8B Fire Scout (Navy)
6	RQ-4A Global Hawk A
7	Grasshopper
8	Moyen Duc
9	Petit Duc
10	Phoenix
11	MQ-1 Predator A
12	MQ-9 Predator B
13	Ranger
14	RQ-7 Shadow 200
15	Sperwer
16	Sperwer LE
17	RQ-2B Pioneer
18	Eagle Eye
19	RQ-5 Hunter
20	GHMD (Navy)
21	Mucke
22	Luna
23	KZO
24	Taifun
25	Fledermaus
26	Falco
27	Nibbo
28	Hermes 180
29	Hermes 450
30	RQ-4B Global Hawk B
31	Sky Warrior ER/MP (Extended Range/Multi-Purpose) (Army)
32	ScanEagle A15
33	Vigilante 496
34	Vigilante 502
35	CamCopter S100
36	Little Bird
37	Neuron
38	Tier II (USMC)
39	RQ-14A - Dragon Eye

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<b>Vehicle Type ID</b>	<b>Vehicle Name</b>
40	Silver Fox
41	SkyLark 1
42	Kestrel
43	Voyeur
44	Coyote
45	FCS Class I (YRQ-16A)
46	Reserved
47	Reserved
48	RQ-11A - Raven-B
49	Spyhawk
50	Wasp
51	Puma
52	Aerosonde
53	ScanEagle A20
54	Sky-X
55	Lince
56	Cobra
57	N-UCAS
58	Killer Bee
59	FCS Class IV (MQ-8B - Army)
60	GoldenEye 50
61	GoldenEye 80
62	Excalibur
63	Orion
64	STRIX-A
65	A -160
66	A-UAV SR
67	A-UAV FR
68	ORKA
69	Watchkeeper Air Vehicle WK450
70	HSUSV
71	CUSV
72	HERTI
73	Fire Shadow
74	RQ-21A
75	LookOut
76	SPY-V
77	Xr-T9 (Rotary wing UA series)
78	Xf-T9 (Fixed wing UA series)
79	Hermes 90
80	Hermes 900
81	Hermes 1500
82	Skylark 2
83	Boeing Experimental 1

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<b>Vehicle Type ID</b>	<b>Vehicle Name</b>
84	Boeing Experimental 2
85	Boeing Experimental 3
86	Boeing Experimental 4
87	US Army Tier 1 Test UA
88	US Army Tier 2 Test UA
89	US Army Tier 3 Test UA
90	Switchblade
91	LEMV
92	Commercial Integrator
93	RQ-4 EuroHawk
94	RQ-1 Predator
95	Heron
96	Asio
97	Spyball
98	Centaur
99	Crex
100	Fury
101	Aerovironment Experimental 1
102	Aerovironment Experimental 2
103	Aerovironment Experimental 3
104	Aerovironment Experimental 4
105	Aerovironment Fixed Sensor 1
106	Aerovironment Fixed Sensor 2
107	Aerovironment Fixed Sensor 3
108	Aerovironment Mobile Sensor 1
109	Aerovironment Mobile Sensor 2
110	Aerovironment Mobile Sensor 3
111	Qube
112	Shrike
113	Global Observer
114	Thunder Quail
115	Avenger

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<b>Vehicle Type ID</b>	<b>Vehicle Name</b>
116	ScanEagle II
117	PATROLLER
118	Spy Owl 100
119	Spy Owl 200
120	Spy Owl 300
121	Persistent Threat Detection System (PTDS)
122	Maveric
123	US Army J-Bird
124	Heron- MALE
125	Heron TP (Turbo Prop) – MALE
126	Searcher MKIII – Tactical
127	Hunter – Tactical
128	Ranger – Tactical
129	Panther- Tactical VTOL
130	Mini Panther – Mini VTOL
131	Bird-Eye 400 – Mini
132	Bird Eye 650 – Mini
133	Ghost-Rotary Mini UAS
134	Electrical Tethered Observation Platform (ETOP) – Hovering Aerial System
135	H-58 Kiowa Warrior
136	AH-64 Apache
137	Desert Hawk III
138	Indago
139	K-MAX
140	Stalker
141	Terminator
142	Lockheed Experimental 1
143	Lockheed Experimental 2
144	Lockheed Experimental 3
145	Lockheed Experimental 4
146	ScanEagle 2

<b>Vehicle Type ID</b>	<b>Vehicle Name</b>
147	AFRL Development A/C 1
148	AFRL Development A/C 2
149	AFRL Development A/C 3
150	Canada Abstracted Vehicle for Sensors
151	Spy'Arrow
152	Spy'Copter
153	Spy'Ranger
154	THALES Experimental 1
155	THALES Experimental 2
156	THALES Experimental 3
157	THALES Experimental 4
158	Altius
$159 \leq x < 2^{16}$	Reserved

**Table 4 - 11: Vehicle Type IDs****4.1.1.2 Message #20: Vehicle ID**

1. This message shall be sent by a VSM/UA to the CUCS to identify the UA [DLI 0200]. The VSM ID shall be filled with the null ID when this message is transmitted directly from a vehicle for which a ground based VSM does not exist [DLI 0357]. This message shall indicate a tail number of zero, and a logical Vehicle ID if transmitted from a VSM, along with the VSM ID when there is no vehicle connected to the VSM [DLI 0358]. This message shall be sent by the VSM/UA whenever the contents of this message (Vehicle ID, tail number, Mission ID or ATC Call sign) change [DLI 0359]. The Vehicle ID Update field allows a VSM to change a logical vehicle ID to a real vehicle ID and vice versa. When the Vehicle ID Update field in this message is filled differently than the Vehicle ID field in this message, this shall signify that the currently used Vehicle ID value is to be replaced with the Vehicle ID Update value [DLI 0360].
2. Upon initial connection with a VSM, after establishment (via Message #20) of vehicle type and vehicle subtype, an optional configuration process may be utilized to configure the CUCS. This configuration process will use a file in lieu of the configuration commands directly from the UA. If this option is utilized, it eliminates the need to send the configuration messages to configure the CUCS for the UA.
3. The binary-formatted file will contain the messages as they would be received from the VSM/UA directly via UDP. The first message in the file shall be Message #20, with the following fields required: 6 (Vehicle Type), 7 (Vehicle Subtype) & 8 (Owning ID) [DLI 0453]. Following Message #20 will be further messages, in the same binary format, for the particular UA's configuration and setup.
4. If the file for the UA type, subtype or Owning ID, or if the checksum provided in Message #20 received from the UA does not match the checksum of the file local to the CUCS, the VSM / UA and CUCS configuration shall continue as defined below [DLI 0446].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0020.01	1	Time Stamp	Double	s	See Section 1.7.2
0020.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0020.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
0020.04	4	VSM ID	Integer 4	None	See Section 1.7.5
0020.05	5	Vehicle ID Update  Vehicle ID that will be replace the current Vehicle ID.	Integer 4	None	See Section 1.7.5
0020.06	6	Vehicle Type  Identifies the type name of vehicle; numbers to be assigned by STANAG Custodian.	Unsigned 2	Enumerated	0 - 65535 = See Table 4-11
0020.07	7	Vehicle Subtype  Assigned by manufacturer or other configuration authority.	Unsigned 2	None	No Restrictions
0020.08	8	Owning ID  Identifies the owner using STANAG 4586 maintained Owning ID Table.	Unsigned 1	None	1 ≤ x ≤ 200
0020.09	9	Tail Number  Null terminated string with the tail number designated by the owning country's certifying agency.	Character 16	None	Printable
0020.10	10	Mission ID  Identifies mission and (by reference) flight plan currently executing on this platform.	Character 20	None	Printable
0020.11	11	ATC Call Sign	Character 32	None	Printable
0020.12	12	Configuration Checksum  Identifies the checksum of the configuration file.	Unsigned 2	None	No Restrictions

**Table 4 - 12: Message #20: Vehicle ID****4.1.1.3 Message #21: VSM Authorisation Response**

1. This message shall be sent by the VSM/UA in response to a CUCS Authorisation Request Message (Message #1) received from a CUCS [DLI 0201].
2. If the request from the CUCS was a broadcast or for an unspecified LOI, and the CUCS ID received in the message is for an authorised CUCS, the VSM/UA shall respond once for each UA or payload that it can potentially control [DLI 0202]. For each UA/payload that the VSM has granted control to a CUCS, the VSM/UA shall respond with its VSM ID (as applicable) and/or specific/logical Vehicle ID(s), the LOI Authorized and LOI Granted fields set as granted to that CUCS for the controlled station functionality with the Controlled Station Mode field set to "Take Control", and the vehicle type and vehicle sub-type fields set correctly

to the controlling CUCS [DLI 0361]. For each UA/payload that the VSM/UA has not granted control to any CUCS, the VSM/UA shall respond with its VSM ID (as applicable) and/or specific/logical Vehicle ID(s), LOI Authorized, LOI Granted set as N/A, controlled station functionality, vehicle type, and vehicle subtype to the requesting CUCS [DLI 0362]. Where a VSM is able to monitor and/or control more than one UA/payload entity, this capability shall be relayed to the CUCS by the use of multiple instances of this message, one per available UA/payload combination [DLI 0363].

3. If the CUCS requested a specified LOI for a specific VSM ID/Vehicle ID and functionality in the Authorisation Request Message, then the VSM/UA shall respond with the requested LOI and Controlled Station Mode as appropriate [DLI 0203]. If another CUCS is in control of the requested UA/payload, the VSM/UA shall deny control to a second CUCS unless that CUCS is commanding an override for the requested functionality [DLI 0204]. If the granting of control of a UA/payload to a CUCS eliminates the potential control of another reported UA/payload entity, the VSM shall send this message to that CUCS ID indicating that the connection to the eliminated UA/payload is no longer available (i. e., connection not authorized) [DLI 0205]. For example, a VSM may be able to potentially control two types of vehicles but only control one vehicle at a time. Once the VSM grants control of one of the vehicle types to a CUCS, the other type is no longer available for control.

4. A CUCS may monitor all VSM Authorisation Response messages on the network, not only the messages directed to that CUCS. By monitoring all messages, a CUCS will know what vehicles/payloads are available for control and will know what vehicles/payloads are currently being controlled by other CUCS. This may be necessary to provide the override capability.

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
<b>0021.01</b>	<b>1</b>	<b>Time Stamp</b>	Double	s	See Section 1.7.2
<b>0021.02</b>	<b>2</b>	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
<b>0021.03</b>	<b>3</b>	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5
<b>0021.04</b>	<b>4</b>	<b>VSM ID</b>	Integer 4	None	See Section 1.7.5
<b>0021.05</b>	<b>5</b>	<b>Data Link ID</b>	Integer 4	None	See Section 1.7.5
<b>0021.06</b>	<b>6</b>	<b>LOI Authorized</b>	Unsigned 1	Bitmapped	0x01 = LOI 2 0x02 = LOI 3 0x04 = LOI 4 0x08 = LOI 5
<b>0021.07</b>	<b>7</b>	<b>LOI Granted</b>	Unsigned 1	Bitmapped	0x01 = LOI 2 0x02 = LOI 3 0x04 = LOI 4 0x08 = LOI 5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0021.08	8	<b>Controlled Station</b>	Unsigned 4	Bitmapped	0x00000000 = UA Platform (Does not include Payload Stations) 0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
0021.09	9	<b>Controlled Station Mode</b>	Unsigned 1	Enumerated	0 = Not In Control 1 = In Control
0021.10	10	<b>Vehicle Type</b>  Identifies the type name of vehicle; numbers to be assigned by STANAG Custodian.	Unsigned 2	Enumerated	0 - 65535 = See Table 4-11
0021.11	11	<b>Vehicle Subtype</b>  Assigned by manufacturer or other configuration authority.	Unsigned 2	None	No Restrictions

**Table 4 - 13: Message #21: VSM Authorisation Response**

#### 4.1.2 Flight Vehicle Command and Status Messages

##### 4.1.2.1 Message #40: Vehicle Configuration Command

This message shall be used to initialize the UA to its current state as required, usually in preparation for launch [DLI 0206]. This message shall be sent from the CUCS to the VSM whenever the UA configuration is changed [DLI 0207].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0040.01	1	Time Stamp	Double	s	See Section 1.7.2
0040.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0040.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
0040.04	4	Initial Propulsion Energy  Amount of usable propulsion energy with respect to the maximum usable propulsion energy for this configuration.	Float	%	No Restrictions

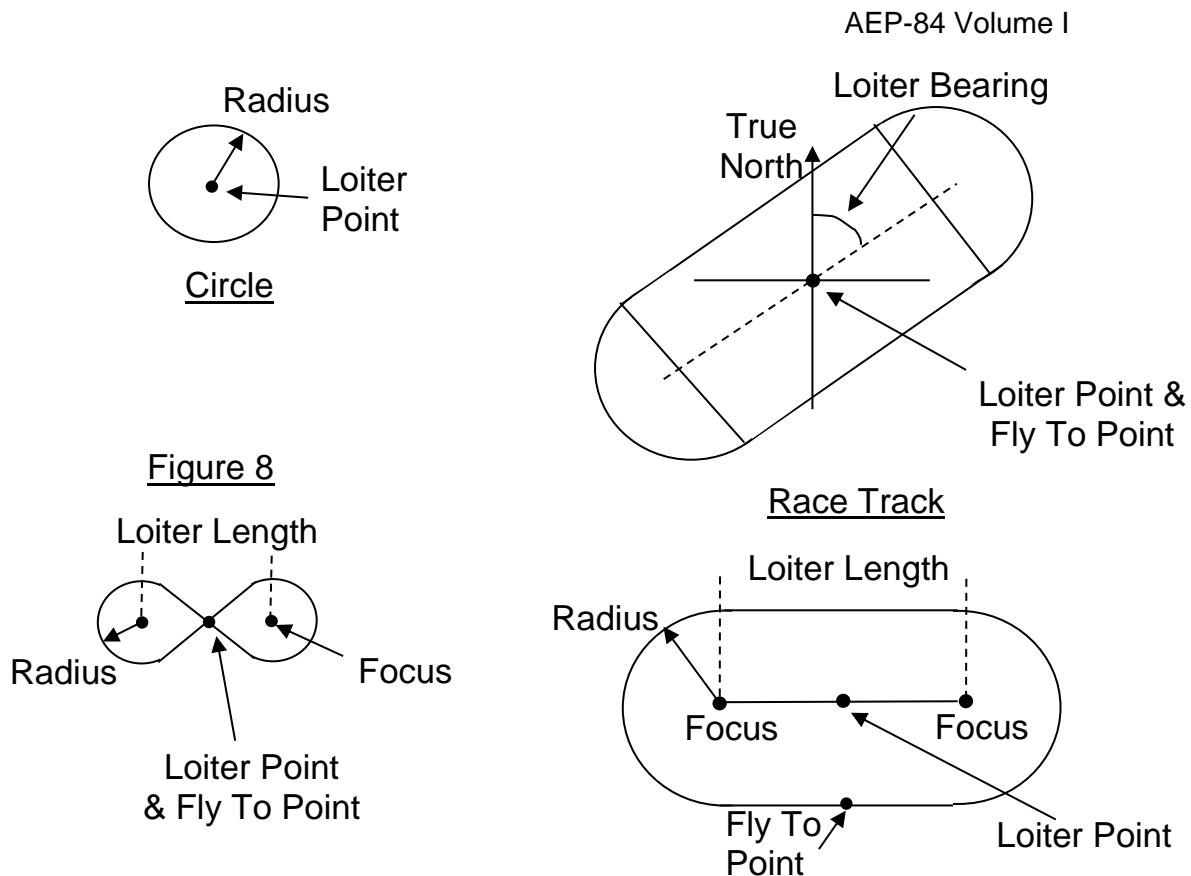
**Table 4 - 14: Message #40: Vehicle Configuration Command****4.1.2.2 Message #41: Loiter Configuration**

1. This message shall be used to command the loiter pattern that the UA must use when in the Loiter Flight Mode [DLI 0208]. (Refer to Message #49, Vehicle Operating Mode and Steering Command.) The Loiter position shall be defined in Message #49 [DLI 0364]. The Loiter altitude and Loiter airspeed shall be used as the commanded values for the UA dependent on the current Altitude mode and current Speed mode settings [DLI 0365]. Refer to Message #49 for additional details.
2. The VSM shall use the General Configuration Messages to define the UA's capability to support the fields commanded in Message #41 [DLI 0366]. (Refer to Section 4.1.7 General Configuration Messages for additional details.)

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0041.01	1	Time Stamp	Double	s	See Section 1.7.2
0041.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0041.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
0041.04	4	Loiter Type	Unsigned 1	Enumerated	1 = Circular 2 = Racetrack 3 = Figure 8 4 = Hover
0041.05	5	Loiter Radius  Used as radius for circular Loiter, and used as the radius of the half circle at each end of the loiter pattern.	Float	m	$1 \leq x \leq 100,000$
0041.06	6	Loiter Length  Used for Racetrack and Figure 8 to define length of pattern, centred around the Loiter Point (defined in Message #49) in the direction of the Loiter Bearing.	Float	m	$1 \leq x \leq 100,000$

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0041.07	7	<b>Loiter Bearing</b>  The bearing of the loiter pattern, referenced to the Loiter Point (defined in Message #49), from True North.	Float	rad	$-\pi \leq x \leq \pi$
0041.08	8	<b>Loiter Direction</b>  Defines direction of turn when rounding the loiter point defined by Message #49.	Unsigned 1	Enumerated	0 = Vehicle Dependent 1 = Clockwise 2 = Counter-Clockwise 3 = Into the wind
0041.09	9	<b>Loiter altitude</b>	Float	m	$-1,000 \leq x \leq 100,000$
0041.10	10	<b>Altitude Type</b>  Defines altitude type (reference frame) for all altitude related fields in this message.	Unsigned 1	Enumerated	0 = Pressure Altitude 1 = Baro Altitude 2 = AGL 3 = WGS-84
0041.15	11	<b>Altitude Change Behaviour</b>	Unsigned 1	Enumerated	0 = Manual 1 = Critical Altitude 2 = Graduate 3 = Max Rate (ROC/ROD) 4 = UA Dependent (Optimum Performance) 5 = Not Defined
0041.11	12	<b>Loiter Speed</b>	Float	m/s	$0 \leq x \leq 10,000$
0041.12	13	<b>Speed Type</b>  Defines speed type (reference frame) for all speed related fields in this message.	Unsigned 1	Enumerated	0 = Indicated Airspeed 1 = True Airspeed 2 = Ground Speed

**Table 4 - 15: Message # 41: Loiter Configuration**



**Figure 4 - 9: Loiter Pattern**

#### 4.1.2.3 Message #42: Vehicle Operating Mode Command (Obsolete and Deleted)

This message is no longer used as of AEP-84 Volume I. Its contents have been moved to message #49 Vehicle Operating And Steering Mode Command.

#### 4.1.2.4 Message #43: Vehicle Steering Command (Obsolete and Deleted)

This message is no longer used as of AEP-84 Volume I. Its contents have been moved to message #49 Vehicle Operating And Steering Mode Command.

#### 4.1.2.5 Message #44: Unmanned Aircraft Lights

This message shall be used by the CUCS to control the UA lights [DLI 0214].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0044.01	1	Time Stamp	Double	s	See Section 1.7.2
0044.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0044.03	3	CUCS ID	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0044.04	4	<b>Set Lights</b>  When a bit is set the lights are commanded on, when the bit is cleared the lights are commanded off.	Unsigned 2	Bitmapped	0x0001 = Nav 0x0002 = NavIR 0x0004 = Strobe 0x0008 = StrobeIR 0x0010 = NVD 0x0020 = Reserved 0x0040 = Landing 0x0080 = LandingIR 0x0100 = Vehicle Specific 1 0x0200 = Vehicle Specific 2 0x0400 = Vehicle Specific 3 0x0800 = Vehicle Specific 4 0x1000 = Vehicle Specific 5 0x2000 = Vehicle Specific 6 0x4000 = Vehicle Specific 7 0x8000 = Vehicle Specific 8

**Table 4 - 16: Message #44: Unmanned Aircraft Lights****4.1.2.6 Message #45: Engine Command**

1. This message shall be used by the CUCS to control the UA engines [DLI 0215].
2. The VSM shall use the General Configuration Messages to define the UA's capability to support the fields commanded in Message #45 [DLI 0368]. (Refer to Section 4.1.7 General Configuration Messages for additional details.)

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0045.01	1	<b>Time Stamp</b>	Double	s	See Section 1.7.2
0045.02	2	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
0045.03	3	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5
0045.04	4	<b>Engine Number</b>  ID of engine currently being commanded.	Integer 4	None	No Restrictions
0045.05	5	<b>Engine Command</b>	Unsigned 1	Enumerated	0 = Stop 1 = Start 2 = Enable/Run 3 - 9 = Reserved 10 - 255 = Vehicle Specific

**Table 4 - 17: Message #45: Engine Command****4.1.2.7 Message #46: Flight Termination Command**

This message shall be used to provide means for the CUCS to issue a flight termination command to the VSM [DLI 0216]. To accomplish flight termination, this message shall be sent twice with two different values in field 4 (once to arm, and a second time to execute) [DLI 0217].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0046.01	1	<b>Time Stamp</b>	Double	s	See Section 1.7.2
0046.02	2	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
0046.03	3	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0046.04	4	Commanded Flight Termination State	Unsigned 1	Enumerated	0 = Reset FT System 1 = Arm FT System 2 = Execute FT Seq.
0046.05	5	Flight Termination Mode	Unsigned 1	Enumerated	0 = Not Specified 1 - 255 = VSM Specific

**Table 4 - 18: Message #46: Flight Termination Command****4.1.2.8 Message #47: Relative Route/Waypoint Absolute Reference Command**

This message shall be used by the CUCS to identify the absolute reference system for relative routes and their associated waypoints [DLI 0218]. The intent of this message is to support moving platforms for launch and recovery, and to support usage of reusable “route templates” (e.g., for search patterns). This message shall be provided prior to commanding programmed flight along any relative route, and updated as necessary otherwise [DLI 0219].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0047.01	1	Time Stamp	Double	s	See Section 1.7.2
0047.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0047.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
0047.04	4	Latitude (Y-axis zero)	Double	rad	$-\pi/2 \leq x \leq \pi/2$
0047.05	5	Longitude (X-axis zero)	Double	rad	$-\pi \leq x \leq \pi$
0047.06	6	Altitude Type  Defines altitude type (reference frame) for all altitude related fields in this message.	Unsigned 1	Enumerated	0 = Pressure Altitude 1 = Baro Altitude 2 = AGL 3 = WGS-84
0047.07	7	Altitude	Float	m	$-1,000 \leq x \leq 100,000$
0047.08	8	Orientation  Defines heading Y-axis.	Float	rad	$-\pi \leq x \leq \pi$
0047.09	9	Route ID  Text identifier of route, or null to update all routes.	Character 20	None	No Restrictions

**Table 4 - 19: Message #47: Relative Route/Waypoint Absolute Reference Command****4.1.2.9 Message #48: Mode Preference Command (Obsolete and Deleted)**

This message is no longer used as of AEP-84 Volume I. Its contents have been moved to message #49 Vehicle Operating And Steering Mode Command.

**4.1.2.10 Message #49: Vehicle Operating Mode and Steering Command.**

1. This message shall be used to control the vehicle operating mode [DLI 0209]. The vehicle operating mode defines the system behaviour and establishes how commands shall be interpreted [DLI 0210]. The behaviours established include vehicle flight path response. The intent of these behaviours is to provide a standard way of expressing common operating modes and tactics. The specific implementation is left up to the vehicle manufacturer.

2. This message shall be used to provide the ability to command a new flight vector to the UA [DLI 0211]. Such commands are generated by manual input. Upon receipt of this message, the vehicle's response shall be to immediately enter into a manoeuvre to achieve the new desired flight state [DLI 0212]. The vehicle's responsibility shall be to avoid unsafe flight states during the manoeuvre to answer the new command [DLI 0213].

3. The VSM shall use the General Configuration Messages to define the UA's capability to support the fields commanded in Message #49, dependent on the current Flight mode (Message #49, Vehicle Operating Mode and Steering Command) and the current Altitude mode (Message #49, Altitude Mode), Speed mode (Message #49, Speed Mode) and Heading mode (Message #49, Heading Mode) states [DLI 0367]. Refer to Section 4.1.7 General Configuration Messages for additional details.

4. The Message #49, Altitude Mode, the Message #49, Speed Mode, and the Message #49, Heading Mode fields are used to determine the source of the altitude, (air)speed, and heading demands respectively for the selected (VSM reported) Flight mode (Message #49, Select Flight Path Control Mode).

5. The Altitude, Speed, and Heading commanded values shall come from a specific configuration message (see below) if the mode setting (report) is "Configuration" [DLI 0369], and the Altitude, Speed, and Heading commanded values shall come from Message #49 when the mode setting (report) is "Manual/Override [DLI 0370]."

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0049.01	1	Time Stamp	Double	s	See Section 1.7.2
0049.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0049.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
0043.04	4	Altitude Command Type	Unsigned 1	Enumerated	0 = No Valid Altitude Command 1 = Altitude 2 = Vertical Speed 3 = Rate-Limited Altitude
0043.05	5	Commanded Altitude  Altitude hold value to be achieved (ignored in Altitude Command Type = 2).	Float	m	-1,000 ≤ x ≤ 100,000
0043.06	6	Commanded Vertical Speed  Vertical Speed value to be achieved (Used in Altitude Command Type = 2, ignored in Altitude Command Type = 1, used as rate limit in Altitude Command Type = 3).	Float	m/s	-1,000 ≤ x ≤ 1,000
0043.07	7	Heading Command Type	Unsigned 1	Enumerated	0 = No Valid Heading Command 1 = Heading 2 = Course 3 = Heading and Course 4 = Roll 5 = Heading Rate

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0043.08	8	<b>Commanded Heading</b>  Heading hold value to be achieved (Used in Heading Command Type = 1 and 3, ignored in Heading Command Type = 2, 4, and 5).	Float	rad	$-\pi \leq x \leq \pi$
0043.09	9	<b>Commanded Course</b>  Course value to be achieved (Used in Heading Command Type = 2 and 3, ignored in Heading Command Type = 1, 4 and 5).	Float	rad	$-\pi \leq x \leq \pi$
0043.10	10	<b>Commanded Turn Rate</b>  Heading or Course turn rate value to be achieved (Used in Heading Command Type = 1 thru 3, and 5).	Float	rad/s	$-100 \leq x \leq 100$
0043.11	11	<b>Commanded Roll Rate</b>  Roll rate value to be achieved (used in Heading Command Type = 4).	Float	rad/s	$-100 \leq x \leq 100$
0043.12	12	<b>Commanded Roll</b> (Used in Heading Command Type = 4).	Float	rad	$-\pi \leq x \leq \pi$
0043.13	13	<b>Commanded Speed</b>	Float	m/s	$0 \leq x \leq 10,000$
0043.14	14	<b>Speed Type</b>  Defines speed type (reference frame) for all speed related fields in this message.	Unsigned 1	Enumerated	0 = Indicated/Calibrated Airspeed 1 = True Airspeed 2 = Ground Speed
0043.15	15	<b>Commanded Waypoint Number</b>  As defined in Section 4.1.5, Mission Messages.	Unsigned 2	None	$1 \leq x \leq 65,534$
0043.16	16	<b>Altimeter Setting</b>  Local Barometric pressure at sea level. Used to correct pressure altitude to barometric altitude.	Float	Pa	$0 \leq x \leq 107,500$
0043.17	17	<b>Altitude Type</b>  Defines altitude type (reference frame) for all altitude related fields in this message.	Unsigned 1	Enumerated	0 = Pressure Altitude 1 = Baro Altitude 2 = AGL 3 = WGS-84
0043.18	18	<b>Loiter Position Latitude</b>  Manual loiter position latitude command.	Double	rad	$-\pi/2 \leq x \leq \pi/2$

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0043.19	19	<b>Loiter Position Longitude</b> Manual Loiter position longitude command.	Double	rad	-π ≤ x ≤ π
0042.04	20	<b>Select Flight Path Control Mode</b>  Specifies the method for controlling the vehicle's flight path. Manual control modes lie in the range 1-10, automatic control modes lie in the range 11-31.	Unsigned 1	Enumerated	0 = No Mode 1 = Reserved 1 2 = Flight Director (Manual near real-time control of UA using Message #49, where UA autopilot is disengaged) 3 - 10 = Reserved 3-10 11 = Waypoint (Fly to predefined waypoint(s)) 12 = Loiter (Defined in Message #41) 13 - 14 = Reserved 13-14 15 = Autopilot (Autopilot engaged, but manual override in near real-time of UA using Message #49) 16 = Terrain Avoidance (Uses Message #49, Unique ID 0043.05 to define clearance distance) 17 = NavAid (Slaved Navigation relative to a navigation beacon.) 18 = Reserved 18 19 = Autoland Engage 20 = Autoland Wave-off 21 = Launch 22 = Slave to Sensor 23 = Force Contingency A 24 = Force Contingency B 25 - 31 = Reserved 25-31 32 - 255 = Vehicle Specific
0048.04	21	<b>Altitude Mode</b>	Unsigned 1	Enumerated	0 = Configuration 1 = Manual/Override until reaching the Waypoint or Loiter Point 2 = Manual/Override
0048.05	22	<b>Speed Mode</b>	Unsigned 1	Enumerated	0 = Configuration 1 = Manual/Override until reaching the Waypoint or Loiter Point 2 = Manual/Override
0048.06	23	<b>Heading Mode</b>	Unsigned 1	Enumerated	0 = Configuration 1 = Manual/Override until reaching the Waypoint or Loiter Point 2 = Manual/Override

**Table 4 - 20: Message #49: Vehicle Operating Mode and Steering Command**

6. For Message #49, Altitude Mode, Speed Mode and Heading Mode fields:

“Configuration” enumeration: When in the selected Flight mode (Message #49, Select Flight Path Control Mode), the Altitude, Speed, and Heading from the Configuration message specified (see below) for that flight mode shall be used [DLI 0371]. While in this (Altitude, Speed, Heading) mode, the Altitude/Speed/Heading commanded values shall not be altered using Message #49 [DLI 0372].

7. “Manual/Override until reaching the Waypoint or Loiter Point” enumeration: Manual/Override commands (Enumeration 2) shall be used until the UA reaches the Waypoint or Loiter Point, at which time the commanded values shall be taken from the Configuration commands (Enumeration 0) [DLI 0373]. When in the selected flight mode (Message #49, Select Flight Path Control Mode), use the “Manual/Override” settings for Altitude, Speed, and Heading for that flight mode until next waypoint or loiter position has been reached, and then use the Configuration message (see below) settings. Once the UA reaches the transition point, it shall revert to the “Configuration” mode [DLI 0374]. In order to re-enter the “Manual/ Override until reaching the Waypoint or Loiter Point” mode, another mode shall first be commanded [DLI 0375].

8. “Manual/Override” enumeration: When in the selected flight mode (Message #49, Select Flight Path Control Mode), the Altitude, Speed, and Heading commanded values shall always be from Message #49 [DLI 0376].

9. Table B1 - 21 shows the source message for the altitude/airspeed for each combination of Flight Mode (Msg. #49, Select Flight Path Control Mode) and Altitude or Airspeed Mode (Msg. #49, Altitude Mode, or Msg. #49, Speed Mode).

<b>Flight Mode</b>	<b>Altitude or Airspeed Mode</b>	<b>Source Message for Altitude or Airspeed</b>
2 – Flight Director	0 – Configuration	Not Defined
	1 – Manual until reaching the WP, Loiter	49
	2 – Manual/Override	49
11 – Waypoint	0 – Configuration	802
	1 – Manual until reaching the WP, Loiter	49
	2 – Manual/Override	49
12 – Loiter	0 – Configuration	41
	1 – Manual until reaching the WP, Loiter	49
	2 – Manual/Override	49
All other Flight Modes	0 – Configuration	Not Defined
	1 – Manual until reaching the WP, Loiter	49
	2 – Manual/Override	49

**Table 4 - 21: Source Message for Altitude/Airspeed**

10. Table B1 - 22 shows the source message for the heading or the lat/long, dependent on which is valid, for each combination of Flight Mode (Msg. #49, Select Flight Path Control Mode) and Heading Mode (Msg. #49, Heading Mode).

<b>Flight Mode</b>	<b>Heading Mode</b>	<b>Source Message for Heading</b>	<b>Source Message for Lat/Long</b>
2 – Flight Director	0 – Configuration	Not Defined	Not Valid
	1 – Manual until reaching the WP, Loiter	49	Not Valid
	2 – Manual/Override	49	Not Valid
11 – Waypoint	0 – Configuration	Not Valid	802
	1 – Manual until reaching the WP, Loiter	49	49
	2 – Manual/Override	49	49
12 – Loiter	0 – Configuration	Not Defined	Not Defined
	1 – Manual until reaching the WP, Loiter	Not Valid	49
	2 – Manual/Override	Not Valid	49
All other Flight Modes	0 – Configuration	Not Defined	Not Defined
	1 – Manual until reaching the WP, Loiter	49	49
	2 – Manual/Override	49	49

**Table 4 - 22: Source Message for Heading**

11. Msg # Specified – Mode valid and the specified message shall be used by the VSM if the functionality is supported by the VSM [DLI 0377].

12. Not Valid – Mode shall never be allowed by STANAG 4586 CUCS or VSM [DLI 0378].

13. Not Defined – STANAG 4586 does not define the functionality, the VSM shall define the required functionality and make the required controls available at the CUCS [DLI 0379]. The VSM may use a formatted DLI message for the functionality if desired.

#### 4.1.2.11 Message #100: Vehicle Configuration

This message shall be used to specify the characteristics of the vehicle, primarily for flight planning purposes [DLI 0220]. It indicates the current characteristics of the vehicle either as specified by type by the manufacturer, or based on current loading. For instance, “Optimum Cruise Speed” is likely only to be available as the manufacturer-specified performance index, even though presence of extra load or external stores may cause the number to vary in an unknown manner.

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
<b>0100.01</b>	<b>1</b>	<b>Time Stamp</b>	Double	s	See Section 1.7.2
<b>0100.02</b>	<b>2</b>	<b>Vehicle ID</b>  See Message #20 declaration.	Integer 4	None	See Section 1.7.5
<b>0100.03</b>	<b>3</b>	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5
<b>0100.04</b>	<b>4</b>	<b>VSM ID</b>	Integer 4	None	See Section 1.7.5
<b>0100.05</b>	<b>5</b>	<b>Configuration ID</b>  Identifies particular configuration of the UA as specified by the manufacturer. (This manufacturer-specified identifier is used by the VSM to provide vehicle specific data, such as current weight and c.g. given current stores status.)	Unsigned 4	None	No Restrictions
<b>0100.06</b>	<b>6</b>	<b>Propulsion Fuel Capacity</b>  Amount of weight in fuel that can be carried for this configuration.  Configuration Dependent <0; Not Applicable	Float	kg	No Restrictions
<b>0100.07</b>	<b>7</b>	<b>Propulsion Battery Capacity</b>  Configuration Dependent <0; Not Applicable	Float	J	No Restrictions
<b>0100.08</b>	<b>8</b>	<b>Maximum Indicated Airspeed</b>  Not to exceed dash speed	Float	m/s	No Restrictions
<b>0100.09</b>	<b>9</b>	<b>Optimum Cruise Indicated Airspeed</b>	Float	m/s	No Restrictions
<b>0100.10</b>	<b>10</b>	<b>Optimum Endurance Indicated Airspeed</b>	Float	m/s	No Restrictions
<b>0100.11</b>	<b>11</b>	<b>Maximum Load Factor</b>  Not to exceed G-load tolerance.	Float	m/s <sup>2</sup>	No Restrictions
<b>0100.12</b>	<b>12</b>	<b>Gross Weight</b>  Calculated gross weight of current configuration, including effects of fuel load changes.	Float	kg	No Restrictions

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0100.13	13	<b>X_CG</b> Calculated centre of gravity of current configuration rearward from the nose.	Float	m	No Restrictions
0100.14	14	<b>Number of Engines</b>	Unsigned 1	None	No Restrictions
0100.15	15	<b>Fuel Density</b>	Unsigned 1	0.005 kg/L	$x \leq 1$

**Table 4 - 23: Message #100: Vehicle Configuration****4.1.2.12 Message #101: Inertial States**

This message shall be used to send the current UA inertial state to the CUCS [DLI 0221].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0101.01	1	<b>Time Stamp</b>	Double	s	See Section 1.7.2
0101.02	2	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
0101.03	3	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5
0101.04	4	<b>Latitude</b>	Double	rad	$-\pi/2 \leq x \leq \pi/2$
0101.05	5	<b>Longitude</b>	Double	rad	$-\pi \leq x \leq \pi$
0101.06	6	<b>Altitude</b> Distance above (+) or below (-).	Float	m	$-1,000 \leq x \leq 100,000$
0101.07	7	<b>Altitude Type</b> Defines altitude type (reference frame) for all altitude related fields in this message.	Unsigned 1	Enumerated	0 = Pressure Altitude 1 = Baro Altitude 2 = AGL 3 = WGS-84 (geoid)
0101.08	8	<b>U_Speed</b> Speed component along true north vector.	Float	m/s	$-10,000 \leq x \leq 10,000$
0101.09	9	<b>V_Speed</b> Speed component along true east vector.	Float	m/s	$-10,000 \leq x \leq 10,000$
0101.10	10	<b>W_Speed</b> Inertial vertical speed component pointing down.	Float	m/s	$-10,000 \leq x \leq 10,000$
0101.11	11	<b>U_Accel</b> Acceleration component along true north vector.	Float	m/s <sup>2</sup>	$-100 \leq x \leq 100$
0101.12	12	<b>V_Accel</b> Acceleration component along true east vector.	Float	m/s <sup>2</sup>	$-100 \leq x \leq 100$
0101.13	13	<b>W_Accel</b> Inertial vertical acceleration component pointing down.	Float	m/s <sup>2</sup>	$-100 \leq x \leq 100$

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0101.14	14	<b>Roll</b> Rotation of the vehicle about the longitudinal axis relative to the local horizontal plane, + is clockwise looking from the rear of the UA towards the front.	Float	rad	$-\pi \leq x \leq \pi$
0101.15	15	<b>Pitch</b> Angle of the vehicle longitudinal axis (tail to nose) relative to the local horizontal, + is up.	Float	rad	$-\pi/2 \leq x \leq \pi/2$
0101.16	16	<b>Heading</b> Projection of the longitudinal axis onto the horizontal plane, and that projection's bearing relative to true North.	Float	rad	$-\pi \leq x \leq \pi$
0101.17	17	<b>Roll Rate</b> Angular rotation rate of the vehicle about the longitudinal axis, + is clockwise looking from the rear of the UA towards the front.	Float	rad/s	$-100 \leq x \leq 100$
0101.18	18	<b>Pitch Rate</b> Angular rotation rate of the vehicle longitudinal axis (tail to nose) relative to the local horizontal, + is up.	Float	rad/s	$-100 \leq x \leq 100$
0101.19	19	<b>Turn Rate</b> Angular rate change of the projection of the longitudinal axis onto the horizontal plane, and that projection's bearing relative to true North.	Float	rad/s	$-100 \leq x \leq 100$
0101.20	20	<b>Magnetic Variation</b> True = Magnetic + Variation	Float	rad	$-\pi \leq x \leq \pi$

**Table 4 - 24: Message #101: Inertial States****4.1.2.13 Message #102: Air and Ground Relative States**

This message shall be used to send the current state of the parameters defined in this message from the UA to the CUCS [DLI 0222].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0102.01	1	<b>Time Stamp</b>	Double	s	See Section 1.7.2
0102.02	2	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0102.03	3	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5
0102.04	4	<b>Angle of Attack</b>	Float	rad	$-\pi \leq x \leq \pi$
0102.05	5	<b>Angle of Sideslip</b>	Float	rad	$-\pi \leq x \leq \pi$
0102.06	6	<b>True Airspeed</b>	Float	m/s	$0 \leq x \leq 10,000$
0102.07	7	<b>Indicated Airspeed</b>	Float	m/s	$0 \leq x \leq 10,000$
0102.08	8	<b>Outside Air Temp</b>	Float	K	$172.15 \leq x \leq 372.15$
0102.09	9	<b>U_Wind</b>  Estimated wind component along true north vector.  The wind vector indicates the direction that the air mass is travelling.	Float	m/s	$-10,000 \leq x \leq 10,000$
0102.10	10	<b>V_Wind</b>  Estimated wind component along true east vector.  The wind vector indicates the direction that the air mass is travelling.	Float	m/s	$-10,000 \leq x \leq 10,000$
0102.11	11	<b>Altimeter Setting</b>  Local Barometric pressure at sea level. Used to correct pressure altitude to barometric altitude.	Float	Pa	$0 \leq x \leq 107,500$
0102.12	12	<b>Barometric Altitude</b>  Altitude based on Altimeter Setting.	Float	m	$-1,000 \leq x \leq 100,000$
0102.13	13	<b>Barometric Altitude Rate</b>  Estimated vertical velocity (+ up) based on pressure rate from air data system.	Float	m/s	$-1,000 \leq x \leq 1,000$
0102.14	14	<b>Pressure Altitude</b>	Float	m	$-1,000 \leq x \leq 100,000$
0102.15	15	<b>AGL Altitude</b>	Float	m	$-1,000 \leq x \leq 100,000$
0102.16	16	<b>WGS-84 Altitude</b>	Float	m	$-1,000 \leq x \leq 100,000$
0102.17	17	<b>U_Ground</b>  Ground Speed component along true north vector.	Float	m/s	$-10,000 \leq x \leq 10,000$
0102.18	18	<b>V_Ground</b>  Ground Speed component along true east vector.	Float	m/s	$-10,000 \leq x \leq 10,000$

**Table 4 - 25: Message #102: Air and Ground Relative States****4.1.2.14 Message #103: Body-Relative Sensed States**

This message shall be used to send the UA body-relative sensed states to the CUCS [DLI 0224]. Directly sensed body-relative states are packaged as a separate message type from

other vehicle states because these terms may need to be known at substantially higher rates for various control-related functions.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0103.01	1	Time Stamp	Double	s	See Section 1.7.2
0103.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0103.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
0103.04	4	X_Body_Accel	Float	m/s <sup>2</sup>	-100 ≤ x ≤ 100
		Longitudinal acceleration, + forward			
0103.05	5	Y_Body_Accel	Float	m/s <sup>2</sup>	-100 ≤ x ≤ 100
		Lateral acceleration, + right			
0103.06	6	Z_Body_Accel	Float	m/s <sup>2</sup>	-100 ≤ x ≤ 100
		Vertical acceleration, + down			
0103.07	7	Roll_Rate	Float	rad/s	-100 ≤ x ≤ 100
0103.08	8	Pitch_Rate	Float	rad/s	-100 ≤ x ≤ 100
0103.09	9	Yaw_Rate	Float	rad/s	-100 ≤ x ≤ 100

**Table 4 - 26: Message #103: Body-Relative Sensed States**

#### 4.1.2.15 Message #104: Vehicle Operating States

This message shall be used to report the current UA operating state while in flight [DLI 0225].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0104.01	1	Time Stamp	Double	s	See Section 1.7.2
0104.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0104.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
0104.04	4	Commanded Altitude	Float	m	-1,000 ≤ x ≤ 100,000
0104.05	5	Altitude Type	Unsigned 1	Enumerated	0 = Pressure Altitude 1 = Baro Altitude 2 = AGL 3 = WGS-84
		Defines altitude type (reference frame) for all altitude related fields in this message.			
0104.06	6	Commanded Heading	Float	rad	-π ≤ x ≤ π
0104.07	7	Commanded Course	Float	rad	-π ≤ x ≤ π
0104.08	8	Commanded Turn Rate	Float	rad/s	-100 ≤ x ≤ 100
0104.09	9	Commanded Roll Rate	Float	rad/s	-100 ≤ x ≤ 100
0104.10	10	Commanded Speed	Float	m/s	0 ≤ x ≤ 10,000
0104.11	11	Speed Type	Unsigned 1	Enumerated	0 = Indicated/Calibrated Airspeed 1 = True Airspeed 2 = Ground Speed
		Defines speed type (reference frame) for all speed related fields in this message.			

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0104.12	12	<b>Power Level</b> Average throttle setting of all engines. Configuration Dependent (Nominally 0-110%)	Integer 2	%	No Restrictions
0104.13	13	<b>Flap Deployment Angle</b>	Integer 1	0.02 rad	$-\pi/2 \leq x \leq \pi/2$
0104.14	14	<b>Speed Brake Deployment Angle</b>	Integer 1	0.02 rad	$-\pi/2 \leq x \leq \pi/2$
0104.15	15	<b>Landing Gear State</b>	Unsigned 1	Enumerated	0 = No Value 1 = Stowed 2 = Cycling 3 = Down 4 = Inoperative
0104.16	16	<b>Current Propulsion Energy Level</b> Reported as a percentage of maximum usable energy for interoperable gauge displays.	Float	%	$0 \leq x \leq 100$
0104.17	17	<b>Current Propulsion Energy Usage Rate</b> Total consumption as a percentage of maximum usable energy of this configuration.	Float	%/s	No Restrictions
0104.18	18	<b>Commanded Roll</b>	Float	rad	$-\pi \leq x \leq \pi$
0104.19	19	<b>Altitude Command Type</b>	Unsigned 1	Enumerated	0 = No Valid Altitude Command 1 = Altitude 2 = Vertical Speed 3 = Rate-Limited Altitude
0104.20	20	<b>Heading Command Type</b>	Unsigned 1	Enumerated	0 = No Valid Heading Command 1 = Heading 2 = Course 3 = Heading and Course 4 = Roll 5 = Heading Rate
3002.03	21	<b>Loiter &amp; Waypoint Validity</b> Indicates validity of field 22, 23 and 24.	Unsigned 1	Bitmapped	0x01 = Fields 22 and 23 are Valid 0x02 = Field 24 is Valid
3002.04	22	<b>Commanded Loiter Position Latitude</b> Applicable even if vehicle is not in Loiter operating mode.	Double	rad	$-\pi/2 \leq x \leq \pi/2$

Unique ID	Field	Data Element Name & Description	Type	Units	Range
3002.05	23	<b>Commanded Loiter Position Longitude</b>  Applicable even if vehicle is not in Loiter operating mode.	Double	rad	$-\pi \leq x \leq \pi$
3002.06	24	<b>Commanded Waypoint Number</b>  Applicable even if vehicle is not in Waypoint operating mode.	Unsigned 2	None	$1 \leq x < 65,535$
0104.21	25	<b>Commanded Vertical Speed</b>	Float	m/s	$-1,000 \leq x \leq 1,000$

**Table 4 - 27: Message #104: Vehicle Operating States****4.1.2.16 Message #105: Engine Operating States**

This message shall be used to report the operating state of a given engine [DLI 0226]. For UA with multiple engines, full operating state shall require one such message for each engine [DLI 0227]. The intent of this message is to provide data for a generic set of indicators for the operator. (Detailed information about engine operating state and health is left as a vehicle-specific function.)

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0105.01	1	<b>Time Stamp</b>	Double	s	See Section 1.7.2
0105.02	2	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
0105.03	3	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5
0105.04	4	<b>Engine Number</b>  ID of engine currently being reported.	Integer 4	None	No Restrictions
0105.05	5	<b>Engine Status</b>	Unsigned 1	Enumerated	0 = Stopped 1 = Started 2 = Enabled/Running 3 - 9 = Reserved 10 - 255 = Vehicle Specific
0105.06	6	<b>Reported Engine Command</b>	Unsigned 1	Enumerated	0 = Stop 1 = Start 2 = Enable/Run 3 - 9 = Reserved 10 - 255 = Vehicle Specific
0105.07	7	<b>Engine Power Setting</b>	Float	%	$0 \leq x \leq 110$
0105.08	8	<b>Engine Speed</b>	Float	rad/s	$0 \leq x \leq 21,000$
0105.09	9	<b>Engine Speed Status</b>	Unsigned 1	Enumerated	0 = No Status 1 = Low - Red 2 = Low - Yellow 3 = Low - Green 4 = Normal - Green 5 = High - Green 6 = High - Yellow 7 = High - Red

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0105.10	10	<b>Output Power (Shaft Torque) Status</b>	Unsigned 1	Enumerated	0 = No Status 1 = Low - Red 2 = Low - Yellow 3 = Low - Green 4 = Normal - Green 5 = High - Green 6 = High - Yellow 7 = High - Red
0105.11	11	<b>Engine Body Temperature Status</b>  For reciprocating engines this status is nominally reported as cylinder head temperature.	Unsigned 1	Enumerated	0 = No Status 1 = Low - Red 2 = Low - Yellow 3 = Low - Green 4 = Normal - Green 5 = High - Green 6 = High - Yellow 7 = High - Red
0105.12	12	<b>Exhaust Gas Temperature Status</b>	Unsigned 1	Enumerated	0 = No Status 1 = Low - Red 2 = Low - Yellow 3 = Low - Green 4 = Normal - Green 5 = High - Green 6 = High - Yellow 7 = High - Red
0105.13	13	<b>Coolant Temperature Status</b>	Unsigned 1	Enumerated	0 = No Status 1 = Low - Red 2 = Low - Yellow 3 = Low - Green 4 = Normal - Green 5 = High - Green 6 = High - Yellow 7 = High - Red
0105.14	14	<b>Lubricant Pressure Status</b>	Unsigned 1	Enumerated	0 = No Status 1 = Low - Red 2 = Low - Yellow 3 = Low - Green 4 = Normal - Green 5 = High - Green 6 = High - Yellow 7 = High - Red
0105.15	15	<b>Lubricant Temperature Status</b>	Unsigned 1	Enumerated	0 = No Status 1 = Low - Red 2 = Low - Yellow 3 = Low - Green 4 = Normal - Green 5 = High - Green 6 = High - Yellow 7 = High - Red
0105.16	16	<b>Fire Detection Sensor Status</b>	Unsigned 1	Enumerated	0 = No Status 1 = Low - Red 2 = Low - Yellow 3 = Low - Green 4 = Normal - Green 5 = High - Green 6 = High - Yellow 7 = High - Red

**Table 4 - 28: Message #105: Engine Operating States****4.1.2.17 Message #106: Vehicle Operating Mode Report**

This message shall be used to report the vehicle-operating mode, as commanded from the Vehicle Operating Mode and Steering Command (Message #49) [DLI 0228].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0106.01	1	Time Stamp	Double	s	See Section 1.7.2
0106.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0106.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
0106.04	4	<b>Select Flight Path Control Mode</b>  Specifies the method for controlling the vehicle's flight path. Manual control modes lie in the range 1-10, automatic control modes lie in the range 11-31.	Unsigned 1	Enumerated	0 = No Mode 1 = Reserved 1 2 = Flight Director (Manual near real-time control of UA using Message #49, where UA autopilot is disengaged) 3 - 10 = Reserved 3-10 11 = Waypoint (Fly to predefined waypoint(s)) 12 = Loiter (Defined in Message #41) 13 - 14 = Reserved 13-14 15 = Autopilot (Autopilot engaged, but manual override in near real-time of UA using Message #49) 16 = Terrain Avoidance (Uses Message #49, Unique ID 0043.05 to define clearance distance) 17 = NavAid (Slaved Navigation relative to a navigation beacon) 18 = Reserved 18 19 = Autoland Engage 20 = Autoland Wave-off 21 = Launch 22 = Slave to Sensor 23 = Force Contingency A 24 = Force Contingency B 25 - 31 = Reserved 25-31 32 - 255 = Vehicle Specific

**Table 4 - 29: Message #106: Vehicle Operating Mode Report**

#### 4.1.2.18 Message #107: Vehicle Lights State

This message shall be used by the VSM to report the state of the UA lights [DLI 0229].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0107.01	1	Time Stamp	Double	s	See Section 1.7.2
0107.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0107.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
0107.04	4	<b>Navigation Lights State</b>  When a bit is set the lights are commanded on, when the bit is cleared the lights are commanded off.	Unsigned 2	Bitmapped	0x0001 = Nav 0x0002 = NavIR 0x0004 = Strobe 0x0008 = StrobeIR 0x0010 = NVD 0x0020 = Reserved 0x0040 = Landing 0x0080 = LandingIR 0x0100 = Vehicle Specific 1 0x0200 = Vehicle Specific 2 0x0400 = Vehicle Specific 3 0x0800 = Vehicle Specific 4 0x1000 = Vehicle Specific 5 0x2000 = Vehicle Specific 6 0x4000 = Vehicle Specific 7 0x8000 = Vehicle Specific 8

**Table 4 - 30: Message #107: Vehicle Lights State**

#### 4.1.2.19 Message #108: Flight Termination Mode Report

This message shall be used to report the flight termination command set at the VSM and its current status [DLI 0230]. This message shall be sent in response to the Flight Termination Message (Message #46) and whenever the current status of flight termination changes [DLI 0231].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0108.01	1	Time Stamp	Double	s	See Section 1.7.2
0108.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0108.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
0108.04	4	<b>Reported Flight Termination State</b>	Unsigned 1	Enumerated	0 = Reset FT System 1 = Arm FT System 2 = Execute FT Seq.
0108.05	5	<b>Reported Flight Termination Mode</b>	Unsigned 1	Enumerated	0 = Not Specified 1 - 255 = VSM specific

**Table 4 - 31: Message #108: Flight Termination Mode Report**

#### 4.1.2.20 Message #109: Mode Preference Report

The VSM shall use the Mode Preference Report Message to report the Altitude mode, Speed mode, and Heading mode states at the VSM to the CUCS [DLI 0380].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0109.01	1	Time Stamp	Double	s	See Section 1.7.2
0109.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0109.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
0109.04	4	Altitude Mode State	Unsigned 1	Enumerated	0 = Configuration 1 = Manual/ Override until reaching the Waypoint or Loiter Point 2 = Manual/Override
0109.05	5	Speed Mode State	Unsigned 1	Enumerated	0 = Configuration 1 = Manual/Override until reaching the Waypoint or Loiter Point 2 = Manual/Override
0109.06	6	Course/Heading Mode State	Unsigned 1	Enumerated	0 = Configuration 1 = Manual/Override until reaching the Waypoint or Loiter Point 2 = Manual/Override

**Table 4 - 32: Message #109: Mode Preference Report****4.1.2.21 Message #110: From-To-Next Waypoint States**

This message shall be used to report the vehicle From-To-Next Waypoints while in certain Flight modes as supported by the UA [DLI 0381]. The From, To, or Next Waypoint may not be valid dependent on the current Flight mode (Message #49, Vehicle Operating Mode and Steering Command), therefore, zero values shall be transmitted in the waypoint number field for invalid waypoints [DLI 0382]. Fields 11 through 16 (To waypoint) shall be used to define the non-loiter/loiter destination (the position toward which the vehicle is flying) when in the "Loiter", "Waypoint" and "Slave to Sensor" Flight modes (Message #49 Vehicle Operating Mode and Steering Command) [DLI 0383]. It is highly encouraged that the "To waypoint" be reported for all other Flight modes where the UA is attempting to achieve a non-loiter/loiter position.

Fields 6 through 10 (From waypoint) shall be used to define the point the UA is departing from when in the "Waypoint" Flight mode (Message #49 Vehicle Operating Mode and Steering Command) [DLI 0384]. Fields 17 through 22 (Next waypoint) shall be used to define the non-loiter/loiter point to which the vehicle will proceed after achieving the "To Waypoint" when in the "Waypoint" Flight mode (Message #49 Vehicle Operating Mode and Steering Command) [DLI 0385]. The From-To-Next Waypoints provide a monitoring station with the capability to view a portion of the UA route. It is highly encouraged that the "From waypoint" and Next waypoint" be reported for all other Flight modes where applicable. The "Waypoint Numbers" used by the VSM in this message shall not correspond to any Mission Waypoint numbers (Message #802) loaded to the VSM by a CUCS, except to report those Mission Waypoints [DLI 0386].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0110.01	1	Time Stamp	Double	s	See Section 1.7.2
0110.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0110.03	3	CUCS ID	Integer 4	None	See Section 1.7.5

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
<b>0110.04</b>	<b>4</b>	<b>Altitude Type</b> Defines altitude type (reference frame) for all altitude related fields in this message.	Unsigned 1	Enumerated	0 = Pressure Altitude 1 = Baro Altitude 2 = AGL 3 = WGS-84
<b>0110.05</b>	<b>5</b>	<b>Speed Type</b> Defines speed type (reference frame) for all speed related fields in this message.	Unsigned 1	Enumerated	0 = Indicated Airspeed 1 = True Airspeed 2 = Ground Speed
<b>0110.06</b>	<b>6</b>	<b>From Waypoint - Latitude</b>	Double	rad	$-\pi/2 \leq x \leq \pi/2$
<b>0110.07</b>	<b>7</b>	<b>From Waypoint - Longitude</b>	Double	rad	$-\pi \leq x \leq \pi$
<b>0110.08</b>	<b>8</b>	<b>From Waypoint Altitude</b>	Float	m	$-1,000 \leq x \leq 100,000$
<b>0110.09</b>	<b>9</b>	<b>From Waypoint Time</b> The time at which the UA reached the waypoint.	Double	s	See Section 1.7.2
<b>0110.10</b>	<b>10</b>	<b>From Waypoint Number</b> 0 indicates that the remaining From Waypoint data is not valid.	Unsigned 2	None	$x \leq 65,534$
<b>0110.11</b>	<b>11</b>	<b>To Waypoint - Latitude</b>	Double	rad	$-\pi/2 \leq x \leq \pi/2$
<b>0110.12</b>	<b>12</b>	<b>To Waypoint - Longitude</b>	Double	rad	$-\pi \leq x \leq \pi$
<b>0110.13</b>	<b>13</b>	<b>To Waypoint Altitude</b>	Float	m	$-1,000 \leq x \leq 100,000$
<b>0110.14</b>	<b>14</b>	<b>To Waypoint Speed</b>	Float	m/s	$0 \leq x \leq 10,000$
<b>0110.15</b>	<b>15</b>	<b>To Waypoint Time</b> The Time at which the UA will reach the waypoint. Not a countdown.	Double	s	See Section 1.7.2
<b>0110.16</b>	<b>16</b>	<b>To Waypoint Number</b> 0 indicates that the remaining To waypoint data is not valid. 65535 indicates that the remaining To Waypoint data is valid, but there is no valid waypoint number.	Unsigned 2	None	No Restrictions
<b>0110.17</b>	<b>17</b>	<b>Next Waypoint - Latitude</b>	Double	rad	$-\pi/2 \leq x \leq \pi/2$
<b>0110.18</b>	<b>18</b>	<b>Next Waypoint - Longitude</b>	Double	rad	$-\pi \leq x \leq \pi$
<b>0110.19</b>	<b>19</b>	<b>Next Waypoint Altitude</b>	Float	m	$-1,000 \leq x \leq 100,000$
<b>0110.20</b>	<b>20</b>	<b>Next Waypoint Speed</b>	Float	m/s	$0 \leq x \leq 10,000$
<b>0110.21</b>	<b>21</b>	<b>Next Waypoint Time</b> The time at which the UA will reach the waypoint. Not a countdown.	Double	s	See Section 1.7.2

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0110.22	22	<b>Next Waypoint Number</b> 0 indicates that the remaining Next Waypoint data is not valid.	Unsigned 2	None	$x \leq 65,534$

**Table 4 - 33: Message #110: From-To-Next Waypoint States****4.1.2.22 Message #111: Loiter Configuration Report**

This message shall be used by the VSM/UA to report the loiter pattern/configuration that the UA is using in the Loiter Flight Mode [DLI 0506].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0111.01	1	<b>Time Stamp</b>	Double	s	See Section 1.7.2
0111.02	2	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
0111.03	3	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5
3004.07	4	<b>Loiter Type</b>	Unsigned 1	Enumerated	0 = Circular 1 = Racetrack 2 = Figure 8 3 = Hover
3004.08	5	<b>Loiter Radius</b>  Used as radius for circular loiter, and used as the radius of the half circle at each end of the loiter pattern.	Float	m	$1 \leq x < 100,000$
3004.09	6	<b>Loiter Length</b>  Used for racetrack and figure 8 to define length of pattern, centred around the Loiter Point (defined in Message #49) in the direction of the Loiter Bearing.	Float	m	$1 \leq x < 100,000$
3004.10	7	<b>Loiter Bearing</b>  The bearing of the loiter pattern, referenced to the Loiter Point (defined in Message #49), from True North.	Float	rad	$-\pi \leq x \leq \pi$
3004.11	8	<b>Loiter Direction</b>  Defines direction of turn when rounding the loiter point defined by "Vehicle Steering Command" Message (Message #49).	Unsigned 1	Enumerated	0 = Vehicle-Dependent 1 = Clockwise 2 = Counter-Clockwise 3 = Into the wind
3004.12	9	<b>Loiter Altitude</b>	Float	m	$-1,000 \leq x \leq 100,000$

Unique ID	Field	Data Element Name & Description	Type	Units	Range
3004.13	10	<b>Altitude Type</b> Defines altitude type (reference frame) for all altitude related fields in this message.	Unsigned 1	Enumerated	0 = Pressure Altitude 1 = Baro Altitude 2 = AGL 3 = WGS-84
3004.02	11	<b>Altitude Change Behavior</b>	Unsigned 1	Enumerated	0 = Manual 1 = Critical Altitude 2 = Graduate 3 = Max Rate (ROC/ROD) 4 = UA Dependent (Optimum Performance) 5 = Not Defined
3004.14	12	<b>Loiter Speed</b>	Float	m/s	$x \leq 10,000$
3004.15	13	<b>Speed Type</b> Defines speed type (reference frame) for all speed related fields in this message.	Unsigned 1	Enumerated	0 = Indicated Airspeed 1 = True Airspeed 2 = Ground Speed

**Table 4 - 34: Message #111: Loiter Configuration Report****4.1.2.23 Message #112: Relative Route/Waypoint Absolute Reference Report**

This message shall be used by the VSM/UA to identify the absolute reference system in use by the UA for the relative routes loaded by the UA (refer to Message #802) [DLI 0510].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0112.01	1	<b>Time Stamp</b>	Double	s	See Section 1.7.2
0112.02	2	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
0112.03	3	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5
0112.04	4	<b>Latitude (Y-axis zero)</b>	Double	rad	$-\pi/2 \leq x \leq \pi/2$
0112.05	5	<b>Longitude (X-axis zero)</b>	Double	rad	$-\pi \leq x \leq \pi$
0112.06	6	<b>Altitude Type</b> Defines altitude type (reference frame) for all altitude related fields in this message.	Unsigned 1	Enumerated	0 = Pressure Altitude 1 = Baro Altitude 2 = AGL 3 = WGS-84
0112.07	7	<b>Altitude</b>	Float	m	$-1,000 \leq x \leq 100,000$
0112.08	8	<b>Orientation</b> Defines heading Y-axis.	Float	rad	$-\pi \leq x \leq \pi$
0112.09	9	<b>Route ID</b> Text identifier of route, or null to update all routes.	Character 20	None	No Restrictions

**Table 4 - 35: Message #112: Relative Route/Waypoint Absolute Reference Report****4.1.3 Payload Command and Status Messages**

Since UAs are commonly used as carriers for payload systems, the messages in this group are specified to provide a means for the UCS to command the operating state in an

interoperable fashion. Vehicles not carrying such payloads need not support the messages in the group.

#### 4.1.3.1 Message #200: Payload Steering Command

1. This message shall be used to steer any steerable payload located at the Station Number specified in the message [DLI 0232]. Table 4-6, Conditional Payload Message Groups, identifies the common payload types that are required to use the Payload Steering Command. This message shall be used to command the “Field of View” and “Focus” for payloads that support these capabilities [DLI 0387].
2. The VSM shall use the General Configuration Messages to define the payloads capability (specified by Station Number) to support the fields commanded in Message #200, dependent on the current Payload Steering Mode (Message #201, Set EO/IR Pointing Mode and Message #202, SAR Mode) for the Payload type [DLI 0388]. Refer to Section 4.1.7 General Configuration Messages for additional details.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0200.01	1	Time Stamp	Double	s	See Section 1.7.2
0200.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0200.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
0200.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
0200.05	5	Set Centreline Azimuth Angle + right of aircraft x axis	Float	rad	-π ≤ x ≤ π

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
<b>0200.06</b>	<b>6</b>	<b>Set Centreline Elevation Angle</b> + above aircraft waterline	Float	rad	$-\pi \leq x \leq \pi$
<b>0200.17</b>	<b>7</b>	<b>Set Zoom</b> Allows control of the payload zoom by either requesting a specific angle or by requesting the payload to zoom in or out until commanded to stop.	Unsigned 1	Enumerated	0 = Use Set Horizontal & Vertical Field Of View 1 = Stop Zoom 2 = Zoom In 3 = Zoom Out
<b>0200.07</b>	<b>8</b>	<b>Set Horizontal Field of View</b> Applies to the Addressed Sensor specified in Message #201.	Float	rad	$0 \leq x \leq 2\pi$
<b>0200.08</b>	<b>9</b>	<b>Set Vertical Field of View</b> Applies to the Addressed Sensor specified in Message #201.	Float	rad	$0 \leq x \leq 2\pi$
<b>0200.09</b>	<b>10</b>	<b>Horizontal Slew Rate</b> + Slew FOV right	Float	rad/s	$-2\pi \leq x \leq 2\pi$
<b>0200.10</b>	<b>11</b>	<b>Vertical Slew Rate</b> + Slew FOV up	Float	rad/s	$-2\pi \leq x \leq 2\pi$
<b>0200.11</b>	<b>12</b>	<b>Latitude</b> Commanded Stare Point latitude: Latitude of centre of FOV.	Double	rad	$-\pi/2 \leq x \leq \pi/2$
<b>0200.12</b>	<b>13</b>	<b>Longitude</b> Commanded Stare Point longitude: Longitude of centre of FOV.	Double	rad	$-\pi \leq x \leq \pi$
<b>0200.13</b>	<b>14</b>	<b>Altitude</b> Altitude of centre of FOV.	Float	m	$-1,000 \leq x \leq 100,000$
<b>0200.14</b>	<b>15</b>	<b>Altitude Type</b> Defines altitude type (reference frame) for all altitude related fields in this message.	Unsigned 1	Enumerated	0 = Pressure Altitude 1 = Baro Altitude 2 = AGL 3 = WGS-84
<b>0200.15</b>	<b>16</b>	<b>Set Focus</b> Applies to the Addressed Sensor specified in Message #201.	Unsigned 1	Enumerated	0 = No Change 1 = Focus Closer 2 = Focus Farther
<b>0200.16</b>	<b>17</b>	<b>Focus Type</b> Applies to the Addressed Sensor specified in Message #201.	Unsigned 1	Enumerated	0 = Auto 1 = Manual

**Table 4 - 36: Message #200: Payload Steering Command****4.1.3.2 Message #201: EO/IR/Laser Payload Command**

1. This message shall be used to command EO/IR/Laser payloads with the exception of payload pointing commands, manual focus commands and FOV (Zoom) commands which are commanded from the Payload Steering Command Message (Message #200) [DLI 0233].
2. Notes:
  - Payloads with optics are assumed to either have fixed focus optics or to have automatic focus capability with the option of manual focus override.
  - Slaved modes are assumed to lock on the centre of FOV at the time the command is received by the payload (VSM).
  - Target slaving implies that the FOV will track the target.
  - Lat-Long slaving implies that the FOV will track a specific location on the ground.
3. The VSM shall use the General Configuration Messages to define the payloads capability (specified by Station Number) to support the fields commanded in Message #201 [DLI 0389]. (Refer to Section 4.1.7 General Configuration Messages for additional details.)

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
<b>0201.01</b>	<b>1</b>	<b>Time Stamp</b>	Double	s	See Section 1.7.2
<b>0201.02</b>	<b>2</b>	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
<b>0201.03</b>	<b>3</b>	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0201.04	4	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
0201.05	5	<b>Addressed Sensor</b> Identifies which sensor (s) to control where applicable. Laser pointers and rangefinders integrated with an EO/IR sensor are not considered a separate sensor.	Unsigned 1	Bitmapped	0x01 = EO 0x02 = IR 0x04 = Payload-specific
0201.06	6	<b>System Operating Mode</b>	Unsigned 1	Enumerated	0 = Stow 1 = Off 2 = Cage 3 = Initialise 4 = Standby 5 = Active 6 = Calibrate 7 - 9 = Reserved 10 - 255 = Payload-specific
0201.07	7	<b>Set EO Sensor Mode</b>	Unsigned 1	Enumerated	0 = BW Mode 1 = Colour Mode
0201.08	8	<b>Set IR Polarity</b>	Unsigned 1	Enumerated	0 = Black Hot 1 = White Hot

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0201.09	9	<b>Image Output</b>	Unsigned 1	Enumerated	0 = None 1 = EO 2 = IR 3 = Both 4 = Payload-specific
0201.10	10	<b>Set EO/IR Pointing Mode</b>	Unsigned 1	Enumerated	0 = No Value 1 = Angle Relative to UA 2 = Slewing Rate Relative to UA 3 = Slewing Rate Relative to Inertial 4 = Lat-Long Slaved 5 = Target Slaved (Track) 6 - 9 = Reserved 10 - 255 = Payload-specific
0201.16	11	<b>Fire Laser Pointer</b>	Unsigned 1	Enumerated	0 = Off 51 = Arm 68 = On - Safe 238 = Fire
0201.11	12	<b>Fire Laser Rangefinder</b>	Unsigned 1	Enumerated	0 = Off 51 = Arm 68 = On - Safe 85 = Fire One Pulse 238 = Fire Multiple Pulses
0201.12	13	<b>Select Laser Rangefinder First/Last Pulse</b>	Unsigned 1	Enumerated	1 = First 2 = Last
0201.13	14	<b>Set Laser Designator Code</b>  Laser Illuminator Code per STANAG 5516 (Ed 2) (Link 16) Page E-3-527 DFI #1676 DUI 001	Unsigned 2	None	No Restrictions
0201.14	15	<b>Initiate Laser Designator</b>	Unsigned 1	Enumerated	0 = Off 51 = Arm 68 = On - Safe 85 = Fire
0201.15	16	<b>Preplan Mode</b>	Unsigned 1	Enumerated	0 = Operate in Preplanned Mode 1 = Operate in Manual Mode

**Table 4 - 37: Message #201: EO/IR/Laser Payload Command****4.1.3.3 Message #202: SAR Payload Commands**

This message shall be used to instruct the VSM to generate all commands for SAR payloads, except for pointing and FOV commands that are covered in the Payload Steering Command Message (Message #200) [DLI 0234].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0202.01	1	<b>Time Stamp</b>	Double	s	See Section 1.7.2
0202.02	2	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
0202.03	3	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0202.04	4	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
0202.05	5	<b>Set Radar State</b>	Unsigned 1	Enumerated	0 = Turn Off 1 = Turn On 2 = Go To Standby 3 = Deploy 4 = Activate 5 = Deactivate 6 = Stow 7 - 9 = Reserved 10 - 255 = Payload-specific
0202.06	6	<b>Set MTI Radar Mode</b>	Unsigned 1	Enumerated	1 = Clutter Map 2 = Moving Target 3 - 9 = Reserved 10 - 255 = Payload-specific
0202.07	7	<b>Set SAR Modes</b>  Per the NSIF Registry, AEDP-4, Annex D. See Message #303, field 7 for details).	Character 6	None	No Restrictions
0202.08	8	<b>Set Radar Resolution</b>  0 = Unknown	Integer 2	cm	0 ≤ x ≤ 10,000

**Table 4 - 38: Message #202: SAR Payload Command**

#### 4.1.3.4 Message #203: Stores Management System Command

1. This message shall be used by the CUCS to command the stores management system located at the Station Number specified in the message [DLI 0235].
2. The VSM shall use the General Configuration Messages to define the Stores Management Systems (specified by Station Number) capability to support the fields commanded in Message #203 [DLI 0390]. (Refer to Section 4.1.7 General Configuration Messages for additional details.)

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
0203.01	1	Time Stamp	Double	s	See Section 1.7.2
0203.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0203.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
0203.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
0203.05	5	Power Command	Unsigned 1	Enumerated	0 = N/A 1 = Power Off 2 = Power On
0203.06	6	Active Weapon Mode Command	Unsigned 1	Enumerated	0 = N/A 17 = Disarm 34 = Initialize 51 = Arm 68 = Jettison 85 = Launch

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0203.07	7	<b>Active Target Acquisition Mode Select</b>	Unsigned 1	Enumerated	0 = N/A 1 = Coordinates 2 = Sensor-Based Tracking 3 - 9 = Reserved 10 - 255 = Payload-specific
0203.08	8	<b>Active Attack Mode</b>	Unsigned 1	Enumerated	0 = N/A 1 = Time 2 = Heading 3 = Window 4 = Altitude 5 - 9 = Reserved 10 - 255 = Payload-specific
0203.09	9	<b>Rack/Rail Ejector Enable (Hung Ordnance)</b>	Unsigned 1	Enumerated	0 = N/A 1 = Lock 2 = Unlock
0203.10	10	<b>Safety Enable Discrete Command</b>	Unsigned 1	Enumerated	0 = N/A 1 = Enable 2 = Inhibit
0203.11	11	<b>Set Target Latitude</b>	Double	rad	$-\pi/2 \leq x \leq \pi/2$
0203.12	12	<b>Set Target Longitude</b>	Double	rad	$-\pi \leq x \leq \pi$
0203.13	13	<b>Set Target Altitude</b>	Float	m	$-1,000 \leq x \leq 100,000$
0203.14	14	<b>Target Altitude Type</b>  Defines altitude type for previous field.	Unsigned 1	Enumerated	0 = Pressure Altitude 1 = Baro Altitude 2 = AGL 3 = WGS-84
0203.15	15	<b>Set Target Inertial Speed (Vx)</b>	Float	m/s	$-1,000 \leq x \leq 1,000$
0203.16	16	<b>Set Target Inertial Speed (Vy)</b>	Float	m/s	$-1,000 \leq x \leq 1,000$
0203.17	17	<b>Set Target Inertial Speed (Vz)</b>	Float	m/s	$-1,000 \leq x \leq 1,000$

**Table 4 - 39: Message #203: Stores Management System Command****4.1.3.5 Message #204: Communications Relay Command**

1. This message shall be used by the CUCS to command the Communications Relay located at the Station Number specified in the message [DLI 0391].
2. The VSM shall use the General Configuration Messages to define the Communication Relay (specified by Station Number) capability to support the fields commanded in Message #204 [DLI 0392]. (Refer to Section 4.1.7 General Configuration Messages for additional details.)

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0204.01	1	<b>Time Stamp</b>	Double	s	See Section 1.7.2
0204.02	2	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
0204.03	3	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0204.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
0204.05	5	Set Relay State	Unsigned 1	Enumerated	0 = Turn Off 1 = Turn On 2 = Go To Standby 3 = Deploy 4 = Activate 5 = Deactivate 6 = Stow 7 - 9 = Reserved 10 - 255 = Payload-specific

**Table 4 - 40: Message #204: Communications Relay Command****4.1.3.6 Message #205: Payload Data Recorder Control Command**

This message shall be used to command the platform payload data storage device indicated in the "Recording Device Number" field to the state as specified in the message [DLI 0236].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0205.01	1	Time Stamp	Double	s	See Section 1.7.2
0205.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0205.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
0205.04	4	Recording Device Number	Unsigned 1	None	No Restrictions

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0205.05	5	<b>Set Recording Index Type</b>	Unsigned 1	Enumerated	0 = Time 1 = Block Number 2 = Event Mark 3 = Session Number 4 - 9 = Reserved 10 - 255 = Payload-specific
0205.06	6	<b>Set Recording Mode</b>	Unsigned 1	Enumerated	0 = Stop 1 = Record 2 - 9 = Reserved 10 - 255 = Payload-specific
0205.07	7	<b>Set Recording Rate</b>	Float	Mbit/s	0.001 ≤ x ≤ 40,000
0205.08	8	<b>Set Recording Index</b> 0 = No Active Index	Integer 4	None	0 ≤ x
0205.09	9	<b>Set Replay Mode</b>	Unsigned 1	Enumerated	0 = Stop 1 = Play 2 = Fast-Forward 3 = Rewind 4 = Search 5 - 9 = Reserved 10 - 255 = Payload-specific
0205.10	10	<b>Set Replay Clock Rate</b>	Float	Mbit/s	0.001 ≤ x ≤ 40,000
0205.11	11	<b>Seek Replay Index</b> 0 = No Active Index	Integer 4	None	0 ≤ x

**Table 4 - 41: Message #205: Payload Data Recorder Control Command****4.1.3.7 Message #206: Payload Bay Command**

This message shall be used to control each payload bay [DLI 0237].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0206.01	1	<b>Time Stamp</b>	Double	s	See Section 1.7.2
0206.02	2	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
0206.03	3	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0206.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
0206.05	5	Payload Bay Doors	Unsigned 1	Enumerated	0 = Close 1 = Open

**Table 4 - 42: Message #206: Payload Bay Command****4.1.3.8 Message #207: Terrain Data Update**

This message shall be used by the CUCS to convey terrain data at a specific location [DLI 0238].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0207.01	1	Time Stamp	Double	s	See Section 1.7.2
0207.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0207.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
0207.04	4	Latitude of terrain data point.	Double	rad	$-\pi/2 \leq x \leq \pi/2$
0207.05	5	Longitude of terrain data point.	Double	rad	$-\pi \leq x \leq \pi$

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0207.06	6	<b>Elevation</b> of terrain data point. Distance above (+) or below (-) the WGS-84 reference geoid.	Float	m	-1,000 ≤ x ≤ 100,000

**Table 4 - 43: Message #207: Terrain Data Update****4.1.3.9 Message #208: CBRN Payload Command**

1. The CBRN Payload Command (Message #208) shall be sent by the CUCS to the VSM to instruct a payload station to perform a given operation or function such as to start sampling [DLI 0454].
2. Note that it will only be logical to make one command per request message since the commands are mutually exclusive.
3. Note: The CUCS will be required to initiate a Field Configuration Request (Message #1200) on Unique ID #0208.09 (Operating Reset Type) in order to define the available operating reset types (e.g., reset sieve pack). As such, the VSM must respond to the CUCS with Field Configuration Enumerated Response (Message #1302) regarding the available vendor specific operating reset types in Unique ID #0208.09 (Operating Reset Type).
4. Note: The VSM shall indicate to the CUCS which commands are available/unavailable using the appropriate field configuration response messages as a response to a CUCS Field Configuration Request (Message #1200) [DLI 0456].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0208.01	1	<b>Time Stamp</b>	Double	s	See Section 1.7.2
0208.02	2	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
0208.03	3	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0208.05	4	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00100000 = Stn #17 0x00200000 = Stn #18 0x00400000 = Stn #19 0x00800000 = Stn #20 0x01000000 = Stn #21 0x02000000 = Stn #22 0x04000000 = Stn #23 0x08000000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
0208.06	5	<b>Set Power Mode</b>  Allows for powering on or off the CBRN sensor at the given station number.	Unsigned 1	Enumerated	0 = Power Off 1 = Power On 2 - 85 = Reserved 86 - 255 = Payload-specific
0208.07	6	<b>Set Operating Mode</b>  Places the CBRN payload in a given operational mode.  Note that "Standby" typically means that agent detection is not possible.	Unsigned 1	Enumerated	0 = Operate 1 = Standby 2 = Training 3 - 85 = Reserved 86 - 255 = Payload-specific
0208.08	7	<b>Reboot</b>  Commands the CBRN sensor at the given station number to cycle into a powering down immediately followed by a powering up of the sensor.	Unsigned 1	Enumerated	0 = Normal Operation 1 = Reboot 2 - 85 = Reserved 86 - 255 = Payload-specific
0208.09	8	<b>Operating Reset Type</b>  Indicates the reset type that will be acted upon in Unique ID #0208.10.	Unsigned 1	Enumerated	0 - 255 = Based on Configuration, as per Message #1200 and #1302

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0208.10	9	<b>Operating Reset State</b> Commands the CBRN sensor at the given station number to reset its operating state which is specifically identified in Unique ID #0208.09 Operating Reset Type (e.g., Reset Sieve Pack). This is not a reset of the configuration parameters.	Unsigned 1	Enumerated	0 = Normal Operation 1 = Reset 2 - 85 = Reserved 86 - 255 = Payload-specific
0208.11	10	<b>Reset Configuration State</b> Commands the CBRN sensor at the given station number to reset its configuration state to the OEM defaults (ex. Display mode).	Unsigned 1	Enumerated	0 = Normal Operation 1 = Reset 2 - 85 = Reserved 86 - 255 = Payload-specific
0208.12	11	<b>Set Sampling Mode</b> In the case of point detectors, commands the CBRN sensor at the given station number to start or stop sampling. In the case of standoff detectors, commands the CBRN sensor at the given station number to start or stop scanning as well as start or stop tracking.	Unsigned 1	Enumerated	0 = Stop Sampling 1 = Start Sampling 2 = Stop Scanning 3 = Start Scanning 4 = Stop Tracking 5 = Start Tracking 6 - 85 = Reserved 86 - 255 = Payload-specific
0208.17	12	<b>Test Type</b> Indicates the test type that will be acted upon in Unique ID #0208.13.	Unsigned 1	Enumerated	0 = Self Test (all Payload Components) 1 = Audio Test 2 = Control Component Test 3 = Power Distribution and Interface Logic Component Test 4 = Sensing Component Test (Confidence Test) 5 = Wireless Comms Component Test 6 = Dismounted Power Component Test 7 = User Interface Component Test (Display Test) 8 - 85 = Reserved 86 - 255 = Payload-specific
0208.13	13	<b>Set Test Mode</b> Commands the payload at the given station number to start or stop the test indicated in Unique ID #0208.17.	Unsigned 1	Enumerated	0 = Stop Test 1 = Start Test 2 - 85 = Reserved 86 - 255 = Payload-specific

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0208.14	14	<b>Set Local Alarm Enunciation</b>  Commands the CBRN sensor at the given station number to silence or activate local alarm (local enunciation).	Unsigned 1	Enumerated	0 = Silence Alarm 1 = Activate Alarm 2 - 85 = Reserved 86 - 255 = Payload-specific
0208.15	15	<b>Set Clock</b>  Sets the payload internal clock manually.	Double	s	See Section 1.7.2
0208.18	16	<b>Set Keyguard</b>  Sets the keyguard on the payload's input device.	Unsigned 1	Enumerated	0 = Unlocked 1 = Locked 2 - 85 = Reserved 86 - 255 = Payload-specific
0208.16	17	<b>Mask</b>  Used to indicate which field is applicable to easily prevent mutually exclusive command from being executed concurrently. Note that the Mask is only applicable starting at Unique ID #0208.06. Also note that the Mask takes precedence over field enumerations.	Unsigned 4	Bitmapped	0x00000010 = Field #5 0x00000020 = Field #6 0x00000040 = Field #7 0x00000080 = Field #8 0x00000100 = Field #9 0x00000200 = Field #10 0x00000400 = Field #11 0x00000800 = Field #12 0x00001000 = Field #13 0x00002000 = Field #14 0x00004000 = Field #15 0x00008000 = Field #16

**Table 4 - 44: Message #208: CBRN Payload Command****4.1.3.10 Message #209: CBRN Payload Configuration Command**

1. The CBRN Payload Configuration Command (Message #209) shall be sent by the CUCS to the VSM to instruct a given CBRN payload station to configure its parameters such as setting the payload sensitivity level [DLI 0457].
2. The VSM shall reply with the CBRN Payload Configuration State (Message # 310) [DLI 0458].
3. Note: The VSM shall indicate to the CUCS which commands are available/unavailable using the appropriate field configuration response messages as a response to a CUCS Field Configuration Request (Message #1200) [DLI 0459].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0209.01	1	<b>Time Stamp</b>	Double	s	See Section 1.7.2
0209.02	2	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
0209.03	3	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0209.05	4	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
0209.06	5	<b>Set Exer/Oper Name</b>  Sets the Exercise or Operation name. Based on the CBRN 4 (STANAG 2103) field EXER 1 or OPER 1 plus the null character.	Character 57	None	Printable
0209.07	6	<b>Set Exer/Oper Flag</b>  Identifies if the Name set in Unique ID #0209.06 is for an exercise or an operation.	Unsigned 1	Enumerated	0 = Exercise 1 = Operation 2 - 85 = Reserved 86 - 255 = Payload-specific
0209.08	7	<b>Set Call Sign</b>  Sets the call sign given for a CBRN sensor at the given station number. Based on the CBRN 4 (STANAG 2103) field ALFA 2 plus the null character.	Character 31	None	Printable
0209.09	8	<b>Set Positioning Mode</b>  Sets the mode for determining the location of the payload.	Unsigned 1	Enumerated	0 = Manual 1 = GPS 2 - 85 = Reserved 86 - 255 = Payload-specific

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0209.10	9	<b>Set Payload Latitude</b> Sets the latitude of the payload when positioning mode is set to manual.	Double	rad	$-\pi/2 \leq x \leq \pi/2$
0209.11	10	<b>Set Payload Longitude</b> Sets the longitude of the payload when positioning mode is set to manual.	Double	rad	$-\pi \leq x \leq \pi$
0209.12	11	<b>Set Payload Altitude</b> Sets the altitude of the payload. Distance above (+) or below (-) the WGS-84 reference geoid.	Float	m	$-1,000 \leq x \leq 100,000$
0209.13	12	<b>Set Payload Sensitivity</b> Sets the payload sensitivity.	Unsigned 1	Enumerated	0 = Normal 1 = High 2 - 85 = Reserved 86 - 255 = Payload-specific
0209.14	13	<b>Set Background Level Subtraction Mode</b> Indicates whether the defined background value should be subtracted from any payload reading values or not.	Unsigned 1	Enumerated	0 = Do Not Subtract 1 = Subtract 2 - 85 = Reserved 86 - 255 = Payload-specific
0209.15	14	<b>Set Background Level Mode</b> Sets the mode for determining the background level.	Unsigned 1	Enumerated	0 = Automatic 1 = Manual 2 - 85 = Reserved 86 - 255 = Payload-specific
0209.16	15	<b>Set Background Level</b> Sets the background level when background level mode is set to manual.	Double	mSv	$0 \leq x$
0209.17	16	<b>Set Detection Mode</b> Sets the detection mode. Note that "Standby" typically means that agent detection is not possible.	Unsigned 1	Enumerated	0 = Automatic 1 = Manual 2 = Standby 3 - 85 = Reserved 86 - 255 = Payload-specific
0209.18	17	<b>Set Detection Level</b> Sets the detection level for the payload.	Unsigned 1	Enumerated	0 = Standard 1 = Miosis (applicable to CHEM) 2 = ICT5 (applicable to CHEM) 3 = ICT50 (applicable to CHEM) 4 = Operational Level 5 = Low Level 6 - 85 = Reserved 86 - 255 = Payload-specific

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0209.19	18	<b>Set Detection Operational Threshold Level</b>  Sets the detection threshold level value when the 'Detection Level = Operational Level'. The payload will alarm when this threshold is reached.  This is a custom threshold that will be applied against either field Contamination Level (Unique ID #0309.08) or Contamination Severity Level (Unique ID #0309.12) as selected by the VSM and declared in Contamination Threshold Field (Unique ID #0310.37).	Double	None	No Restrictions
0209.20	19	<b>Set Detection Low Threshold Level</b>  Sets the detection level value when the 'Detection Level = Low Level'. The payload will alarm when this threshold is reached.  This is a custom threshold that will be applied against either field Contamination Level (Unique ID #0309.08) or Contamination Severity Level (Unique ID #0309.12) as selected by the VSM and declared in Contamination Threshold Field (Unique ID #0310.37).	Double	None	No Restrictions
0209.31	20	<b>Set Detection Threshold Delay</b>  Sets the threshold delay which defines how long the detection value must be equal to or greater than the threshold (as declared in Contamination Threshold Field Unique ID #0310.37) before the payload would alarm. This can be used to reduce false alarms.	Unsigned 2	0.01 s	No Restrictions

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
0209.21	21	<b>Set Sampling Interval</b>  Sets the payload sampling interval. The interval is defined as "start of sampling period to next start". For example, if a 10 min sample is taken "on the hour" then the interval is set to 60 minutes.  0 = Not Set	Unsigned 4	min	No Restrictions
0209.22	22	<b>Set Sampling Duration</b>  Sets the payload sampling duration.  0 = Not Set	Unsigned 4	min	No Restrictions
0209.23	23	<b>Set Sampling Volume</b>  Sets the payload sampling volume.  0 = Not Set	Double	m3	0 ≤ x
0209.24	24	<b>Set Audio Level</b>  Sets the audio level for the alarm enunciation.	Unsigned 1	Enumerated	0 = High 1 = Medium 2 = Low 3 = Off 4 - 85 = Reserved 86 - 255 = Payload-specific
0209.28	25	<b>Set Detection Above Threshold Update Frequency</b>  Determines the frequency at which the payload will send updated CBRN4 while in an alarm state for a given threat. If the frequency is set to zero then the payload will send the CBRN4, for a given threat, based on sensor determined logic.	Float	Hz	0 ≤ x ≤ 100
0209.32	26	<b>Set Location Label</b>  Sets a user friendly location label.	Character 16	None	Printable
0209.33	27	<b>Set Group Location Label</b>  Sets a user friendly label for the location of a group of sensors.	Character 16	None	Printable
0209.34	28	<b>Set CBRN4 Delivery Mode</b>  Configures whether a CBRN4 product will be sent with every CBRN Detection (Message #309) or only those related to threats (above threshold, above threshold update and NIL measurements).	Unsigned 1	Enumerated	0 = Threat Related 1 = Continuous 2 - 85 = Reserved 86 - 255 = Payload-specific

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0209.35	29	<b>Set Language</b> Sets the payload interface language.	Unsigned 1	Enumerated	0 = English 1 = French 2 - 85 = Reserved 86 - 255 = Payload-specific
0209.27	30	<b>Mask</b> Used to indicate which fields should be ignored and as such not have their configuration changed. This is useful when trying to configure multiple payloads with a single message. Note that the Mask is only applicable starting at Unique ID #0209.06. Also note that the Mask takes precedence over field enumerations.	Unsigned 4	Bitmapped	0x00000010 = Field #5 0x00000020 = Field #6 0x00000040 = Field #7 0x00000080 = Field #8 0x00000100 = Field #9 0x00000200 = Field #10 0x00000400 = Field #11 0x00000800 = Field #12 0x00001000 = Field #13 0x00002000 = Field #14 0x00004000 = Field #15 0x00008000 = Field #16 0x00010000 = Field #17 0x00020000 = Field #18 0x00040000 = Field #19 0x00080000 = Field #20 0x00100000 = Field #21 0x00200000 = Field #22 0x00400000 = Field #23 0x00800000 = Field #24 0x01000000 = Field #25 0x02000000 = Field #26 0x04000000 = Field #27 0x08000000 = Field #28 0x10000000 = Field #29

**Table 4 - 45: Message #209: CBRN Payload Configuration Command****4.1.3.11 Message #210: CBRN Payload Detailed Info Request**

1. The CBRN Payload Detailed Info Request (Message #210) shall be sent by the CUCS to the VSM to request available stored information such as logs, detailed sensor measurements (spectra), etc. from a given payload station [DLI 0472]. When requesting expected size of information, the CUCS shall use the Command Type (Unique ID #0210.10) of type “Estimate” [DLI 0498]. This allows the CUCS or the operator to adjust the query to modify the request to something manageable for the system/network to handle before making a CBRN Payload Detailed Info Request (Message #210) with the Command Type (Unique ID #0210.10) set to type “Download” to command the actual download of the information.
2. Note that the information is assumed to be contained in one or more files.
3. Note: The CUCS will be required to initiate a Field Configuration Request (Message #1200) on Unique ID #0210.06 (Information Type) in order to define the available information types (e.g., detailed sensor measurements). As such, the VSM must respond to the CUCS with Field Configuration Enumerated Response (Message #1302) regarding the available types or any vendor specific information types.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0210.01	1	<b>Time Stamp</b>	Double	s	See Section 1.7.2
0210.02	2	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
0210.03	3	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0210.05	4	<b>Station Number</b>  Defines the station number.	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
0210.06	5	<b>Information Type</b>  Defines the type of information requested.	Unsigned 1	Enumerated	0 = Logs 1 = Above Threshold CBRN Detailed Sensor Measurements 2 = Above Threshold CBRN4s 3 = Below Threshold CBRN4s 4 = Below Threshold CBRN Detailed Sensor Measurements 5 = Logs (for Above Threshold CBRN Measurements) 6 = NIL CBRN4s 7 = NIL CBRN Detailed Measurements 8 = Video 9 = Image 10 - 50 = Reserved 51 - 255 = Payload-specific
0210.07	6	<b>Request Mode</b>  Commands the CBRN sensor at the given station number to retrieve the most recent log or the log files in a certain date/time range.	Unsigned 1	Enumerated	0 = Most Recent 1 = Date/Time Range 2 - 85 = Reserved 86 - 255 = Payload-specific

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0210.08	7	<b>Start Date/Time Range</b> Defines the start date/time range for the requested logs.	Double	s	See Section 1.7.2
0210.09	8	<b>End Date/Time Range</b> Defines the end date/time range for the requested logs.	Double	s	See Section 1.7.2
0210.10	9	<b>Command Type</b> Defines the command type.	Unsigned 1	Enumerated	0 = Estimate 1 = Download 2 - 85 = Reserved 86 - 255 = Payload-specific

**Table 4 - 46: Message #210: CBRN Payload Detailed Info Request****4.1.3.12 Message #211: Storage Capacity Management Request**

This message shall be used by the CUCS to command the storage management system located at the Station Number specified in the message [DLI 0497].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0211.01	1	<b>Time Stamp</b>	Double	s	See Section 1.7.2
0211.02	2	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
0211.03	3	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0211.04	4	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
0211.05	5	<b>Information Type</b>  Defines the type of information that will be managed.	Unsigned 1	Enumerated	0 = Logs 1 = Above Threshold CBRN Detailed Sensor Measurements 2 = Above Threshold CBRN4s 3 = Below Threshold CBRN4s 4 = Below Threshold CBRN Detailed Sensor Measurements 5 = Logs (for Above Threshold CBRN Measurements) 6 = NIL CBRN4s 7 = NIL CBRN Detailed Measurements 8 = Video 9 = Image 10 - 50 = Reserved 51 - 255 = Payload-specific
0211.06	6	<b>Request Mode</b>  Specifies the storage capacity management command.	Unsigned 1	Enumerated	0 = Archive 1 = Delete 2 - 85 = Reserved 86 - 255 = Payload-specific

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0211.07	7	<b>Start Date/Time Range</b> Defines the start date/time range for the data that will be managed.	Double	s	See Section 1.7.2
0211.08	8	<b>End Date/Time Range</b> Defines the end date/time range for the data that will be managed.	Double	s	See Section 1.7.2

**Table 4 - 47: Message #211: Storage Capacity Management Request****4.1.3.13 Message #212: CBRN Payload Display Configuration Command**

1. The CBRN Payload Display Configuration Command (Message #212) shall be sent by the CUCS to the VSM to instruct a given CBRN payload station to configure its display parameters such as setting the display contrast [DLI 0457].
2. The VSM shall reply with the CBRN Payload Configuration State (Message #310) [DLI 0458].
3. Note: The VSM shall indicate to the CUCS which commands are available/unavailable using the appropriate field configuration response messages as a response to a CUCS Field Configuration Request (Message #1200) [DLI 0459].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0212.01	1	<b>Time Stamp</b>	Double	s	See Section 1.7.2
0212.02	2	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
0212.03	3	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0212.04	4	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
0212.05	5	<b>Set Display Brightness Level</b>  Sets the brightness of the display.	Unsigned 1	Enumerated	0 = Off 1 = Low 2 = Medium 3 = High 4 = Night Vision 5 - 85 = Reserved 86 - 255 = Payload-specific
0212.06	6	<b>Set Display Mode</b>  Sets the display mode.	Unsigned 1	Enumerated	0 = Power Save 1 = Continuous 2 - 85 = Reserved 86 - 255 = Payload-specific
0212.07	7	<b>Set Display Contrast</b>  Sets the display contrast.	Unsigned 1	%	$x \leq 100$
0212.08	8	<b>Set Other Visual Indicators Brightness Level</b>  Sets the brightness of other visual indicators (e.g., LED lamps).	Unsigned 1	Enumerated	0 = Off 1 = Low 2 = Medium 3 = High 4 = Night Vision 5 - 85 = Reserved 86 - 255 = Payload-specific

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0212.09	9	<b>Mask</b> Used to indicate which field is applicable to easily prevent mutually exclusive command from being executed concurrently. Note that the Mask is only applicable starting at Unique ID #0212.05. Also note that the Mask takes precedence over field enumerations.	Unsigned 4	Bitmapped	0x00000010 = Field #5 0x00000020 = Field #6 0x00000040 = Field #7 0x00000080 = Field #8

**Table 4 - 48: Message #212: CBRN Payload Display Configuration Command****4.1.3.14 Message #213: Payload Scan Window Configuration Command**

1. The Payload Scan Window Configuration Command (Message #213) shall be sent by the CUCS to the VSM to instruct a given payload station to configure its scan window parameters [DLI 0527].
2. The Payload Scan Window Configuration Command (Message #213) shall be used to configure a CBRN standoff payload scan window [DLI 0528].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0213.01	1	Time Stamp	Double	s	See Section 1.7.2
0213.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0213.03	3	CUCS ID	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0213.04	4	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
0213.05	5	<b>Set Start Scan Window Azimuth</b>  Sets the payload's start scan azimuth. Relative to true north.	Float	rad	$0 \leq x \leq 2\pi$
0213.06	6	<b>Set End Scan Window Azimuth</b>  Sets the payload's end scan azimuth. Relative to true north.	Float	rad	$0 \leq x \leq 2\pi$
0213.07	7	<b>Set Scan Window Min Elevation</b>  Sets the payload's minimum elevation. Relative to local horizontal.	Float	rad	$-\pi/2 \leq x \leq \pi/2$
0213.08	8	<b>Set Scan Window Max Elevation</b>  Sets the payload's maximum elevation. Relative to local horizontal.	Float	rad	$-\pi/2 \leq x \leq \pi/2$
0213.09	9	<b>Set Azimuth Scan Rate</b>  Sets the payload's azimuth scan rate.	Float	rad/s	No Restrictions

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0213.10	10	<b>Set Elevation Scan Rate</b> Sets the payload's elevation scan rate.	Float	rad/s	No Restrictions
0213.11	11	<b>Set Scan Mode</b> Sets the payload's scan mode.	Unsigned 1	Enumerated	0 = Horizontal 1 - 85 = Reserved 86 - 255 = Payload-specific

**Table 4 - 49: Message #213: Payload Scan Window Configuration Command****4.1.3.15 Message #300: Payload Configuration**

1. This message shall be used to identify payload configuration by vehicle station [DLI 0239]. Configuration data is used by mission planning, dynamic re-planning, and mission execution monitoring applications to determine flight performance characteristics, manoeuvring limits, and to ascertain flight safety issues, particularly during takeoff and landing. In-flight configuration changes may also need to be tracked by the UCS in terms of their effect on vehicle performance as the mission progresses.
2. This message shall be used to provide the CUCS with payload configuration on initial start up and on a change basis [DLI 0240]. The VSM/vehicle shall send this message in response to a CUCS Authorisation Request Message (Message #1) [DLI 0393]. One instance of this message shall be sent by the VSM/UA for each employed payload station when requested by the CUCS [DLI 0241]. An instance of the message shall be sent each time the configuration changes [DLI 0242].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0300.01	1	<b>Time Stamp</b>	Double	s	See Section 1.7.2
0300.02	2	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
0300.03	3	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5
0300.04	4	<b>VSM ID</b>	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0300.05	5	Payload Stations Available	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0300.06	6	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
0300.07	7	<b>Payload Type</b>  Type ID associated with deployable or dispensable payloads (e.g., chaff, weapons).	Unsigned 1	Enumerated	0 = Not Specified 1 = EO 2 = IR 3 = EO/IR 4 = SAR 5 = Fixed Camera 6 = Comms Relay 7 = Dispensable Payload 8 = Recorder 9 = Payload Bay Door 10 = CBRN 11 = SMS 12 - 50 = Reserved 51 - 255 = VSM Specific
0300.08	8	<b>Station Door</b>	Unsigned 1	Enumerated	0 = No 1 = Yes
0300.09	9	<b>Number of Payload Recording Devices</b>	Unsigned 1	None	No Restrictions

**Table 4 - 50: Message #300: Payload Configuration****4.1.3.16 Message #301: EO/IR Configuration State**

This message shall be used to define the EO/IR configuration to the CUCS [DLI 0243].

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
<b>0301.01</b>	<b>1</b>	<b>Time Stamp</b>	Double	s	See Section 1.7.2
<b>0301.02</b>	<b>2</b>	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
<b>0301.03</b>	<b>3</b>	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5
<b>0301.04</b>	<b>4</b>	<b>VSM ID</b>	Integer 4	None	See Section 1.7.5
<b>0301.05</b>	<b>5</b>	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
<b>0301.06</b>	<b>6</b>	<b>EO/IR Type</b>  Type is identified using NATO stock numbers, which are 13-digit numerical values conforming with the NATO Codification System as defined in STANAGs 3150 and 3151 define the structure for these values.	Character 14	None	No Restrictions
<b>0301.07</b>	<b>7</b>	<b>EO/IR Type Revision Level</b>  Number identifying modification level of the type specified in EO/IR Type Field.	Unsigned 1	None	No Restrictions

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0301.08	8	<b>EO Vertical Image Dimension</b>  Number of pixel rows, where 0 = Off.	Integer 2	None	$0 \leq x$
0301.09	9	<b>EO Horizontal Image Dimension</b>  Number of pixel columns, where 0 = Off.	Integer 2	None	$0 \leq x$
0301.10	10	<b>IR Vertical Image Dimension</b>  Number of pixel rows, where 0 = Off.	Integer 2	None	$0 \leq x$
0301.11	11	<b>IR Horizontal Image Dimension</b>  Number of pixel columns, where 0 = Off.	Integer 2	None	$0 \leq x$
0301.12	12	<b>Field of Regard - Elevation Min</b>  Minimum payload centre field of view wrt UA, using payload gimbal if present. Positive value is above the surface defined by the UA lateral/longitudinal plane.	Float	rad	$-\pi \leq x \leq \pi$
0301.13	13	<b>Field of Regard - Elevation Max</b>  Maximum payload centre field of view wrt UA, using payload gimbal if present. Positive value is above the surface defined by the UA lateral/longitudinal plane.	Float	rad	$-\pi \leq x \leq \pi$
0301.14	14	<b>Field of Regard - Azimuth Min</b>  Minimum payload centre field of view wrt UA, using payload gimbal if present. Positive value is clockwise as viewed from above relative to the nose of the UA.	Float	rad	$-\pi \leq x \leq \pi$
0301.15	15	<b>Field of Regard - Azimuth Max</b>  Maximum payload centre field of view wrt UA, using payload gimbal if present. Positive value is clockwise as viewed from above relative to the nose of the UA.	Float	rad	$-\pi \leq x \leq \pi$

**Table 4 - 51: Message #301: EO/IR Configuration State**

#### 4.1.3.17 Message #302: EO/IR/Laser Operating State

This message shall be used to report the operating state of the EO/IR payload by station to the CUCS [DLI 0244].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0302.01	1	Time Stamp	Double	s	See Section 1.7.2
0302.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0302.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
0302.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
0302.05	5	<b>Addressed Sensor</b> Identifies which sensor(s) is under control where applicable.	Unsigned 1	Bitmapped	0x01 = EO 0x02 = IR 0x04 = Payload-specific
0302.06	6	System Operating Mode State	Unsigned 1	Enumerated	0 = Stowed 1 = Off 2 = Caged 3 = Initialising 4 = Standby 5 = Active 6 = Calibrating 7 - 9 = Reserved 10 - 255 = Payload-specific
0302.07	7	EO Sensor Mode Status	Unsigned 1	Enumerated	0 = BW Mode 1 = Colour Mode

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
0302.08	8	<b>IR Polarity Status</b>	Unsigned 1	Enumerated	0 = Black Hot 1 = White Hot
0302.09	9	<b>Image Output State</b>	Unsigned 1	Enumerated	0 = None 1 = EO 2 = IR 3 = Both 4 = Payload-specific
0302.10	10	<b>Actual Centreline Elevation Angle</b>  + above aircraft waterline	Float	rad	$-\pi \leq x \leq \pi$
0302.11	11	<b>Actual Vertical Field of View</b>	Float	rad	$0 \leq x \leq 2\pi$
0302.12	12	<b>Actual Centreline Azimuth Angle</b>  + right of aircraft axis	Float	rad	$-\pi \leq x \leq \pi$
0302.13	13	<b>Actual Horizontal Field of View</b>	Float	rad	$0 \leq x \leq 2\pi$
0302.14	14	<b>Actual Sensor Rotation Angle</b>  + Clockwise rotation from aircraft normal (Up)	Float	rad	$-\pi \leq x \leq \pi$
0302.15	15	<b>Image Position</b>  Indicates when the latitude, longitude and altitude fields are filled with valid data.	Unsigned 1	Enumerated	0 = Fields 16, 17, and 18 Not Valid 1 = Fields 16, 17, 18 Valid
0302.16	16	<b>Latitude</b>  of image centre.	Double	rad	$-\pi/2 \leq x \leq \pi/2$
0302.17	17	<b>Longitude</b>  of image centre.	Double	rad	$-\pi \leq x \leq \pi$
0302.18	18	<b>Altitude</b>  Distance above (+) or below (-) the WGS-84 reference geoid of image centre.	Float	m	$-1,000 \leq x \leq 100,000$
0302.19	19	<b>Pointing Mode State</b>	Unsigned 1	Enumerated	0 = No Value 1 = Angle Relative to UA 2 = Slew Rate Relative to UA 3 = Slew Rate Relative to Inertial 4 = Lat-Long Slaved 5 = Target Slaved (Track) 6 - 9 = Reserved 10 - 255 = Payload-specific
0302.20	20	<b>Preplan Mode</b>	Unsigned 1	Enumerated	0 = Operate in Preplanned Mode 1 = Operate in Manual Mode

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0302.21	21	<b>Reported Range</b> If > 0 then reported range is valid for the current reported location in this message.	Float	m	0 ≤ x ≤ 100,000 (0= Range is invalid)
0302.22	22	<b>Fire Laser Pointer Status</b>	Unsigned 1	Enumerated	0 = Off 1 = On - Safed 2 = Armed 3 = Firing 4 = Masked 5 - 15 = Reserved 16 - 255 = Payload-specific
0302.26	23	<b>Fire Laser Rangefinder Status</b>	Unsigned 1	Enumerated	0 = Off 1 = On - Safed 2 = Armed 3 = Recharging (Armed) 4 = Firing 5 = Masked 6 - 15 = Reserved 16 - 255 = Payload-specific
0302.23	24	<b>Selected Laser Rangefinder First/Last Pulse</b>	Unsigned 1	Enumerated	1 = First 2 = Last
0302.24	25	<b>Laser Designator Code</b> Laser Illuminator Code per STANAG 5516 (Ed 2) (Link 16) Page E-3-527 DFI #1676 DUI 001.	Unsigned 2	None	No Restrictions
0302.25	26	<b>Laser Designator Status</b>	Unsigned 1	Enumerated	0 = Off 1 = On - Safed 2 = Armed 3 = Firing 4 = Masked

**Table 4 - 52: Message #302: EO/IR/Laser Operating State**

#### 4.1.3.18 Message #303: SAR Operating State

This message shall be used to report the SAR operating state by station to the CUCS [DLI 0245].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0303.01	1	Time Stamp	Double	s	See Section 1.7.2
0303.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0303.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
0303.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
0303.05	5	SAR Type  Type is identified using NATO stock numbers, which are 13-digit numerical values as of date of publication.	Character 14	None	No Restrictions
0303.06	6	SAR Type Revision Level  Number identifying modification level of the type specified in the SAR Type Field.	Unsigned 1	Enumerated	0 - 255 = Revision Level
0303.07	7	Radar Operating Mode  Reference: NSIF Registry, AEDP-4, Annex-D	Character 5	None	No Restrictions

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0303.08	8	Radar Operating Status	Unsigned 1	Enumerated	0 = Powered Off 1 = Powered On 2 = Standby 3 = Deployed 4 = Activated 5 = Deactivated 6 = Stowed 7 - 9 = Reserved 10 - 255 = Payload-specific
0303.09	9	Radar MTI Mode Status	Unsigned 1	Enumerated	1 = Clutter Map 2 = Moving Target 3 - 9 = Reserved 10 - 255 = Payload-specific
0303.10	10	Resolution	Float	m	0 ≤ x ≤ 100 (0 = unknown)
0303.11	11	Current Field of View - Elevation Min  (above body x axis)	Float	rad	-π ≤ x ≤ π
0303.12	12	Current Field of View - Elevation Max  (above body x axis)	Float	rad	-π ≤ x ≤ π
0303.13	13	Current Field of View - Azimuth Min  (right of body x axis)	Float	rad	-π ≤ x ≤ π
0303.14	14	Current Field of View - Azimuth Max  (right of body x axis)	Float	rad	-π ≤ x ≤ π

**Table 4 - 53: Message #303: SAR Operating State****3.1.3.19 Message #304: Stores Management System Status**

This message shall be used to report the stores management system status to the CUCS [DLI 0246].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0304.01	1	Time Stamp	Double	s	See Section 1.7.2
0304.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0304.03	3	CUCS ID	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0304.04	4	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
0304.05	5	<b>Active Weapon Type</b>	Unsigned 1	Enumerated	0 = No Mode 1 = Air-To-Air Weapon 2 = Air-To-Ground Weapon 3 = Air-To-Surface Weapon
0304.06	6	<b>Active Weapon Sensors</b>	Unsigned 1	Enumerated	0 = No Mode 1 = EO 2 = Laser 3 = EM 4 = IR
0304.07	7	<b>Active Weapon Number per Station</b>	Unsigned 1	None	No Restrictions
0304.08	8	<b>Active Target Acquisition Mode</b>	Unsigned 1	Enumerated	0 = No Mode 1 = Coordinates 2 = Sensor-based Tracking 3 - 9 = Reserved 10 - 255 = Payload-specific
0304.09	9	<b>Active Attack Mode</b>	Unsigned 1	Enumerated	0 = No Mode 1 = Time 2 = Heading 3 = Window 4 = Altitude 5 - 9 = Reserved 10 - 255 = Payload-specific

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0304.10	10	<b>Weapon Initializing</b>	Unsigned 1	Enumerated	0 = No Mode 1 = Sensors Initial Alignment 2 = Seeker Steering Mode 3 = Navigation Data Loading 4 = Target Data Loading
0304.11	11	<b>Weapon Release Clearance</b>	Unsigned 1	Enumerated	0 = Not Clear 1 = Clear
0304.12	12	<b>Clearance Validity</b>	Unsigned 1	Enumerated	0 = Not Clear 1 = Clear
0304.13	13	<b>Weapon Power State</b>	Unsigned 1	Enumerated	0 = Unpowered 1 = Powered
0304.14	14	<b>Weapon Status</b>	Unsigned 1	Enumerated	0 = N/A 1 = Ready 2 = Armed
0304.15	15	<b>Rack/Rail/Ejector Unlock</b>	Unsigned 1	Enumerated	0 = Unlocked 1 = Locked
0304.16	16	<b>Safety Enable Discrete State</b>	Unsigned 1	Enumerated	0 = N/A 1 = Enable 2 = Inhibit
0304.17	17	<b>Launch Acceptable Region (LAR) Status</b>	Unsigned 1	Enumerated	0 = N/A 1 = Green (Acceptable) 2 = Yellow (Marginal) 3 = Red (Not Acceptable)
0304.18	18	<b>Safe Separation Status (Weapon)</b>	Unsigned 1	Enumerated	0 = N/A 1 = Green (Released) 2 = Red (Hung Store)
0304.19	19	<b>Number of Stores Available</b>  0 = Empty or N/A 255 = 255 or Greater Count	Unsigned 1	None	No Restrictions

**Table 4 - 54: Message #304: Stores Management System Status****4.1.3.20 Message #305: Communications Relay Status**

This message shall be used to report the Communications Relay status to the CUCS [DLI 0247].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0305.01	1	<b>Time Stamp</b>	Double	s	See Section 1.7.2
0305.02	2	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
0305.03	3	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0305.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
0305.05	5	Report Relay State	Unsigned 1	Enumerated	0 = Turn Off 1 = Turn On 2 = Go To Standby 3 = Deploy 4 = Activate 5 = Deactivate 6 = Stow 7 - 9 = Reserved 10 - 255 = Payload-specific

**Table 4 - 55: Message #305: Communications Relay Status****4.1.3.21 Message #306: Payload Data Recorder Status**

This message shall be used to report the status of the platform payload data storage device(s) [DLI 0248]. It assumes that there is a potential for multiple recorders on-board the platform and that each recorder has independent play/record states (e.g., is capable of simultaneous record and playback activity.) Recorder status messages shall be sent by request only. [DLI 0249].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0306.01	1	Time Stamp	Double	s	See Section 1.7.2
0306.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0306.03	3	CUCS ID	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0306.04	4	<b>Recording Device Number</b>	Unsigned 1	None	No Restrictions
0306.05	5	<b>Active Recording Index Type</b>  Indicates the type of indexing currently in use on the given recorder.	Unsigned 1	Enumerated	0 = Time 1 = Block Number 2 = Event Mark 3 = Session Number 4 - 9 = Reserved 10 - 255 = Payload-specific
0306.06	6	<b>Recording Mode Status</b>	Unsigned 1	Enumerated	0 = Stopped 1 = Recording 2 - 9 = Reserved 10 - 255 = Payload-specific
0306.07	7	<b>Record Rate</b>	Float	Mbit/s	0.001 ≤ x ≤ 40,000
0306.08	8	<b>Current Recording Index</b>  0 = No Active Index.	Integer 4	None	0 ≤ x
0306.09	9	<b>Record Index Time Stamp</b>  For events, time of the event, for blocks or sessions, the time of block or session start.	Double	s	See Section 1.7.2
0306.10	10	<b>Replay Mode Status</b>	Unsigned 1	Enumerated	0 = Stopped 1 = Playing 2 = Fast-Forwarding 3 = Rewinding 4 = Searching 5 - 9 = Reserved 10 - 255 = Payload-specific
0306.11	11	<b>Replay Clock Rate</b>	Float	Mbit/s	0.001 ≤ x ≤ 40,000
0306.12	12	<b>Current Replay Index</b>  0 = No Active Index.	Integer 4	None	0 ≤ x
0306.13	13	<b>Health Status Code</b>	Integer 2	None	No Restrictions

**Table 4 - 56: Message #306: Payload Data Recorder Status****4.1.3.22 Message #307: Vehicle Payload/Recorder Configuration**

This message shall be used by the VSM to identify the payload/recorder configuration of the UA and is sent to the CUCS [DLI 0250]. This message will be sent once for each connection between a Payload and Recorder.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0307.01	1	<b>Time Stamp</b>	Double	s	See Section 1.7.2
0307.02	2	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
0307.03	3	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0307.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
0307.05	5	Payload Recorder	Unsigned 1	None	No Restrictions

**Table 4 - 57: Message #307: Vehicle Payload/Recorder Configuration****4.1.3.23 Message #308: Payload Bay Status**

This message shall be used to return the status of a payload bay [DLI 0251].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0308.01	1	Time Stamp	Double	s	See Section 1.7.2
0308.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0308.03	3	CUCS ID	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0308.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
0308.05	5	Payload Bay Door Status	Unsigned 1	Enumerated	0 = Closed 1 = Open

**Table 4 - 58: Message #308: Payload Bay Status****4.1.3.24 Message #309: CBRN Detection**

1. The CBRN Detection (Message #309) shall be used by the VSM to report basic contamination related measurements from a given CBRN payload station [DLI 0460].
2. Field 11, CBRN4 Report Reference, shall provide a reference to retrieve the actual payload product [DLI 0461]. The payload product (i.e., the detection data) is compiled in accordance with ATP-45 (E), STANAG 2103 as a CBRN 4 Report. Detailed measurements such as spectra data can be requested from the payload using CBRN Payload Detailed Info Request (Message #210).
3. If an above threshold (or NIL) measurement is detected, then the VSM shall send this message (unsolicited), to the CUCS [DLI 0462]. Otherwise, this message shall be sent based on the Schedule Message Update Command Message (Message #1402) and/or Generic Information Request Message (Message #1403) [DLI 0463].
4. A CBRN payload that detects more than one agent shall send a separate CBRN Detection (Message #309) for each agent detected [DLI 0499].
5. A CBRN payload with meteorological capability shall provide meteorological data as part of the CBRN4 [DLI 0464].

6. If not already provided by the VSM, the CUCS shall initiate a Field Configuration Request (Message #1200) on either the Contamination Level (Unique ID #0309.08) or on the Contamination Severity Level (Unique ID #0309.12) based on the value indicated in the Contamination Threshold Field (Unique ID #0310.37) in order to define the various caution and warning limits [DLI 0500]. The Contamination Level (Unique ID #0309.08) is an absolute value detected by the payload while the Contamination Severity Level (Unique ID #0309.12) is an abstract value that maps to the Contamination Level (Unique ID #0309.08). The Contamination Severity Level (Unique ID #0309.12) is particularly useful for payload's that are capable of multi substance detection by facilitating the setting of warning and caution thresholds for those substances. If the Contamination Severity Level field is used then a mapping shall exist between this field and Contamination Level (Unique ID #0309.08) and Substance Detected (Unique ID #0309.07) [DLI 0501].

7. If the "Detection Type" (Unique ID #0309.06) is equal to "Above Threshold", "Above Threshold Update" or "NIL" then the VSM shall resend the CBRN Detection (Message #309) if it does not receive a Message Acknowledgment (Message #1400) from the CUCS [DLI 0502].

8. CBRN point detectors must report the detection location related fields (Unique ID #0309.18, #0309.19, and #0309.20) [DLI 0503]. Typically CBRN point detectors are to declare to the CUCS that they do not support area related fields (Unique ID #0309.13, #0309.14, #0309.15, #0309.16, and #0309.17) [DLI 0504].

9. CBRN standoff detectors must declare to the CUCS whether they will report on the detection location related fields (Unique ID #0309.18, #0309.19, and #0309.20) and/or the area related fields (Unique ID #0309.13, #0309.14, #0309.15, #0309.16, and #0309.17) [DLI 0505].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0309.01	1	Time Stamp	Double	s	See Section 1.7.2
0309.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0309.03	3	CUCS ID	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0309.05	4	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
0309.06	5	<b>Detection Type</b>  Indicates the type of detection in relation to the payload's substance threshold(s).	Unsigned 1	Enumerated	0 = Below Threshold 1 = Above Threshold 2 = Above Threshold Update 3 = NIL (Detection Cleared) 4 - 85 = Reserved 86 - 255 = Payload-specific
0309.07	6	<b>Substance Detected</b>  Indicates the substance that was detected by the payload. Based on the CBRN 4 fields INDIA 2 (Substance Definition) or INDIAR 2 (Identification of the Material).	Character 9	None	Printable

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
<b>0309.08</b>	<b>7</b>	<p><b>Contamination Level</b></p> <p>Indicates the level of contamination detected. Based on the CBRN 4 field ROMEO 1 (Contamination, Dose and Doserate/Dosage).</p> <p>Please Refer to STANAG 2103 for Applicable Range for Dose Rate and Contamination or Dose Level.</p> <p>Note that the ATP-45 use of Miosis is not applicable here for payloads. Payloads capable of Miosis mode are to declare it in fields with Unique ID #0209.18 and #0310.14 (Detection Level).</p>	Double	See Unique ID #0309.09	No Restrictions

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0309.09	8	<b>Contamination Level UoM</b>  Indicates the units of measurement for the level of contamination detected. Based on the CBRN 4 field ROMEO 1 (Contamination, Dose and Doserate/Dosage).	Unsigned 1	Enumerated	0 = Unspecified 1 = ACPL (Agent Containing Particles Per Litre) 2 = BQM2 (Becquerel Per Square Meter) 3 = BQM3 (Becquerel Per Cubic Meter) 4 = MGM2 (Milligrams Per Square Meter) 5 = MGM3 (Milligrams Per Cubic Meter) 6 = PPB (Parts Per Billion) 7 = PPM (Parts Per Million) 8 = CFUM2 (Colony Forming Units Per Square Metre) 9 = CFUML (Colony Forming Units Per Millimetre) 10 = CGY (Centigray) 11 = CSV (Centisievert) 12 = MGY (Milligray) 13 = MPK (Milligram Per 70 Kg Person) 14 = MSV (Millisievert) 15 = NOO (Number of Micro-Organisms) 16 = UGY (Microgray) 17 = CGH (Centigray Per Hour) 18 = CSH (Centisievert Per Hour) 19 = USH (Microsievert Per Hour) 20 = MGH (Milligray Per Hour) 21 = MM3 (Milligram-Minutes Per Cubic Meter) 22 = MSH (Millisievert Per Hour) 23 = UGH (Microgray Per Hour) 24 - 85 = Reserved 86 - 255 = Payload-specific
0309.12	9	<b>Contamination Severity Level</b>  An abstract form of reporting the contamination level that would facilitate setting warning and caution thresholds particularly in the case of payload's capable of multi substance detection.	Unsigned 1	None	No Restrictions

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
0309.10	10	<b>Detection Timestamp</b> Indicates the time the detection took place. Based on the CBRN 4 field SIERRA 1.	Double	s	See Section 1.7.2
0309.11	11	<b>CBRN4 Report Reference</b> The report reference is an identifier associated with the CBRN payload product (i.e., CBRN 4 Report). The CBRN Detection will be provided as a CBRN 4 Report in accordance with ATP-45 (E), STANAG 2103. 0 = No More Information Available.	Unsigned 4	None	No Restrictions
0309.13	12	<b>Distance To Cloud</b> Indicates the estimated distance from payload to cloud. Based on the CBRN 4 field QUEBEC 6.	Unsigned 4	m	No Restrictions
0309.14	13	<b>Left Radial Line</b> Indicates the orientation of the left radial line. Based on the CBRN 4 field QUEBEC 7.	Float	rad	$-\pi \leq x \leq \pi$
0309.15	14	<b>Right Radial Line</b> Indicates the orientation of the right radial line. Based on the CBRN 4 field QUEBEC 8.	Float	rad	$-\pi \leq x \leq \pi$
0309.16	15	<b>Cloud Top Angle</b> Indicates the cloud top angle. Based on the CBRN 4 field QUEBEC 9.	Float	rad	$-\pi \leq x \leq \pi$
0309.17	16	<b>Cloud Bottom Angle</b> Indicates the cloud bottom angle. Based on the CBRN 4 field QUEBEC 10.	Float	rad	$-\pi \leq x \leq \pi$
0309.18	17	<b>Detection Latitude</b> Indicates the latitude of the detection.	Double	rad	$-\pi/2 \leq x \leq \pi/2$
0309.19	18	<b>Detection Longitude</b> Indicates the longitude of the detection.	Double	rad	$-\pi \leq x \leq \pi$

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0309.20	19	<b>Detection Altitude</b> Indicates the altitude of the detection. Distance above (+) or below (-) the WGS-84 reference geoid.	Float	m	-1,000 ≤ x ≤ 100,000

**Table 4 - 59: Message #309: CBRN Detection****4.1.3.25 Message #310: CBRN Payload Configuration State**

1. The CBRN Payload Configuration State (Message #310) shall be sent by the VSM to the CUCS to report on a given CBRN payload station configuration state [DLI 0465].
2. This message shall be sent following the VSM Authorization Response (Message #21) and Payload Type Report (Message #300) in response to a CUCS Authorization Request (Message #1) [DLI 0466].
3. This message shall also be sent every time the configuration changes [DLI 0467].
4. This message shall otherwise be sent as a response to the CBRN Payload Configuration Command (Message #209) [DLI 0468].
5. Note: The VSM shall indicate to the CUCS which commands are available/unavailable using the appropriate field configuration response messages as a response to a CUCS Field Configuration Request (Message #1200) [DLI 0483].
6. The VSM shall indicate, using the Contamination Threshold Field (Unique ID #0310.37), which contamination level field in the CBRN Detection (Message #309) is to be used by the CUCS to set warning and caution levels [DLI 0506].
7. If the ‘Detection Level’ (Unique ID #0310.14) is set to “Operational Level” then the payload shall alarm when the ‘Detection Operational Threshold Level’ (Unique ID #0310.15) threshold is crossed [DLI 0587].
8. If the ‘Detection Level’ (Unique ID #0310.14) is set to “Low Level” then the payload shall alarm when the ‘Detection Low Threshold Level’ (Unique ID #0310.16) threshold is crossed [DLI 0588].
9. The ‘Detection Above Threshold Update Frequency’ (Unique ID #0310.28) indicates the frequency at which the payload shall send CBRN4 while in an alarm state for a given threat. [DLI 0589]. If the frequency is set to zero then the payload shall send the CBRN4, for a given threat, based on sensor determined logic [DLI 0590].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0310.01	1	<b>Time Stamp</b>	Double	s	See Section 1.7.2
0310.02	2	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
0310.03	3	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0310.05	4	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
0310.06	5	<b>Exer/Oper Name</b>  Indicates the Exercise or Operation name. Based on the CBRN 4 (STANAG 2103) field EXER 1 or OPER 1 plus the null character.	Character 57	None	Printable
0310.07	6	<b>Exer/Oper Flag</b>  Identifies if the Name set in Unique ID #0310.06 is for an exercise or an operation.	Unsigned 1	Enumerated	0 = Exercise 1 = Operation 2 - 85 = Reserved 86 - 255 = Payload-specific
0310.08	7	<b>Call Sign</b>  Indicates the call sign given for the payload at the given station number. Maps to CBRN 4 (STANAG 2103) field ORGIDFT 1 plus the null character.	Character 31	None	Printable
0310.09	8	<b>Positioning Mode</b>  Indicates the payload positioning mode at the given station number.	Unsigned 1	Enumerated	0 = Manual 1 = GPS 2 - 85 = Reserved 86 - 255 = Payload-specific

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
0310.10	9	<b>Payload Sensitivity</b> Indicates the payload sensitivity.	Unsigned 1	Enumerated	0 = Normal 1 = High 2 - 85 = Reserved 86 - 255 = Payload-specific
0310.11	10	<b>Background Level Subtract Mode</b> Indicates whether the defined background value is subtracted from any sensor reading values or not.	Unsigned 1	Enumerated	0 = Do Not Subtract 1 = Subtract 2 - 85 = Reserved 86 - 255 = Payload-specific
0310.12	11	<b>Background Level Mode</b> Indicates the mode for determining the background level.	Unsigned 1	Enumerated	0 = Automatic 1 = Manual 2 - 85 = Reserved 86 - 255 = Payload-specific
0310.13	12	<b>Detection Mode</b> Indicates the detection mode.  Note that "Standby" typically means that agent detection is not possible.	Unsigned 1	Enumerated	0 = Automatic 1 = Manual 2 = Standby 3 - 85 = Reserved 86 - 255 = Payload-specific
0310.14	13	<b>Detection Level</b> Indicates the detection level.	Unsigned 1	Enumerated	0 = Standard 1 = Miosis (applicable to CHEM) 2 = ICT5 (applicable to CHEM) 3 = ICT50 (applicable to CHEM) 4 = Operational Level 5 = Low Level 6 - 85 = Reserved 86 - 255 = Payload-specific
0310.15	14	<b>Detection Operational Threshold Level</b> Indicates the detection threshold level value when the 'Detection Level = Operational Level'.  This is a custom threshold level that will be applied against either field Contamination Level (Unique ID #0309.08) or Contamination Severity Level (Unique ID #0309.12) as selected by the VSM and declared in Contamination Threshold Field (Unique ID #0310.37).	Double	None	No Restrictions

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
0310.16	15	<b>Detection Low Threshold Level</b>  Indicates the detection threshold level value when the 'Detection Level = Low Level'.  This is a custom threshold level that will be applied against either field Contamination Level (Unique ID #0309.08) or Contamination Severity Level (Unique ID #0309.12) as selected by the VSM and declared in Contamination Threshold Field (Unique ID #0310.37).	Double	None	No Restrictions
0310.30	16	<b>Detection Threshold Delay</b>  Indicates the threshold delay which defines how long the detection value must be equal to or greater than the threshold (as declared in Contamination Threshold Field Unique ID #310.37) before the payload would alarm. This can be used to reduce false alarms.	Unsigned 2	0.01s	No Restrictions
0310.17	17	<b>Sampling Interval</b>  Indicates the payload sampling interval. The interval is defined as "start of sampling period to next start". For example, if a 10 min sample is taken "on the hour" then the interval is set to 60 minutes. 0 = Not Set.	Unsigned 4	min	No Restrictions
0310.18	18	<b>Sampling Duration</b>  Indicates the payload sampling duration. 0 = Not Set.	Unsigned 4	min	No Restrictions
0310.19	19	<b>Sampling Volume</b>  Indicates the payload sampling volume. 0 = Not Set.	Double	m3	$0 \leq x$

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
0310.20	20	<b>Audio Level</b> Indicates the audio level for the alarm enunciation.	Unsigned 1	Enumerated	0 = High 1 = Medium 2 = Low 3 = Off 4 - 85 = Reserved 86 - 255 = Payload-specific
0310.21	21	<b>Display Brightness Level</b> Indicates the brightness of the display.	Unsigned 1	Enumerated	= Off 1 = Low 2 = Medium 3 = High 4 = Night Vision 5 - 85 = Reserved 86 - 255 = Payload-specific
0310.22	22	<b>Product Name</b> Indicates the payload product name (ex. FSD, VPBio).	Character 30	None	Printable
0310.23	23	<b>Identifier</b> Indicates an OEM specific identifier such as serial number. Maps to CBRN 4 (STANAG 2103) field MSGID 4 plus the null character.	Character 30	None	Printable
0310.24	24	<b>SW/Firmware Version</b> Indicates the payload software or firmware version.	Character 30	None	Printable
0310.25	25	<b>Payload CBRN Type</b> Indicates the payload CBRN type.	Unsigned 1	Enumerated	0 = Chemical 1 = Biological 2 = Radiological 3 = Nuclear 4 = Chemical Standoff 5 = Biological Standoff 6 = Radiological Standoff 7 = Nuclear Standoff 8 - 85 = Reserved 86 - 255 = Payload-specific
0310.27	26	<b>Power Mode</b> Indicates whether the payload is powered on or off.	Unsigned 1	Enumerated	0 = Power Off 1 = Power On 2 - 85 = Reserved 86 - 255 = Payload-specific
0310.28	27	<b>Detection Above Threshold Update Frequency</b> Indicates the frequency at which the payload will send CBRN4 while in an alarm state for a given threat. If the frequency is set to zero then the payload will send the CBRN4, for a given threat, based on sensor determined logic.	Float	Hz	$0 \leq x \leq 100$

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
0310.29	28	<b>Storage Utilisation</b> Indicates the percentage of utilised storage space.	Unsigned 1	%	x ≤ 100
0310.31	29	<b>Display Mode</b> Indicates the display mode.	Unsigned 1	Enumerated	0 = Power Save 1 = Continuous 2 - 85 = Reserved 86 - 255 = Payload-specific
0310.32	30	<b>Display Contrast</b> Indicates the display contrast.	Unsigned 1	%	x ≤ 100
0310.33	31	<b>Language</b> Indicates the payload interface language.	Unsigned 1	Enumerated	0 = English 1 = French 2 - 85 = Reserved 86 - 255 = Payload-specific
0310.34	32	<b>Keyguard</b> Indicates the keyguard state on the payload's input device.	Unsigned 1	Enumerated	0 = Unlocked 1 = Locked 2 - 85 = Reserved 86 - 255 = Payload-specific
0310.35	33	<b>Location Label</b> A user friendly location label.	Character 16	None	Printable
0310.36	34	<b>Group Location Label</b> A user friendly label for the location of a group of sensors	Character 16	None	Printable
0310.37	35	<b>Contamination Threshold Field</b> Indicates which contamination level field is to be used for warning and caution levels.	Unsigned 1	Enumerated	0 = Contamination Level (Unique ID #0309.08) 1 = Contamination Severity Level (Unique ID #0309.12) 2 - 85 = Reserved 86 - 255 = Payload-specific
0310.38	36	<b>Other Visual Indicators Brightness Level</b> Indicates the brightness of other visual indicators (e.g., LED lamps).	Unsigned 1	Enumerated	0 = Off 1 = Low 2 = Medium 3 = High 4 = Night Vision 5 - 85 = Reserved 86 - 255 = Payload-specific
0310.39	37	<b>CBRN4 Delivery Mode</b> Identifies whether a CBRN4 product will be sent with every CBRN Detection (Message #309) or only those related to threats (above threshold, above threshold update and NIL measurements).	Unsigned 1	Enumerated	0 = Threat Related 1 = Continuous 2 - 85 = Reserved 86 - 255 = Payload-specific

**Table 4 - 60: Message #310: CBRN Payload Configuration State**

#### 4.1.3.26 Message #311: CBRN Payload Operating State

1. The CBRN Payload Operating State (Message #311) shall be sent by the VSM to the CUCS to report on the operating state for a given CBRN payload station such as current battery life or current GPS location [DLI 0469].
2. This message shall be sent as a response to the CBRN Payload Command (Message #208) [DLI 0529].
3. The overall payload state as well as the VSM communication state shall be provided separately via the Subsystems Status Request (Message #1000), Subsystem Status Report (Message #1101) as well as Subsystem Status Alert Message (Message #1100) [DLI 0471].
4. Note: The VSM shall indicate to the CUCS which commands are available/unavailable using the appropriate field configuration response messages as a response to a CUCS Field Configuration Request (Message #1200) [DLI 0484].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0311.01	1	Time Stamp	Double	s	See Section 1.7.2
0311.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0311.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
0311.05	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
0311.06	5	GPS Fix  Indicates whether the payload is currently locked or not to a satellite.	Unsigned 1	Enumerated	0 = Not Locked 1 = Locked 2 - 85 = Reserved 86 - 255 = Payload-specific

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
<b>0311.07</b>	<b>6</b>	<b>Power Source</b> Indicates the payload's current power source.	Unsigned 1	Enumerated	0 = AC/DC 1 = Battery 2 - 85 = Reserved 86 - 255 = Payload-specific
<b>0311.08</b>	<b>7</b>	<b>Battery Remaining</b> Indicates the remaining battery life.	Unsigned 1	%	$x \leq 100$
<b>0311.09</b>	<b>8</b>	<b>Battery Voltage</b> Indicates the voltage of the battery.	Unsigned 2	0.01 V	No Restrictions
<b>0311.10</b>	<b>9</b>	<b>Uptime</b> Indicates the total time since the sensor has been powered on.	Unsigned 4	min	No Restrictions
<b>0311.11</b>	<b>10</b>	<b>Payload State</b> Indicates the payload state.	Unsigned 1	Enumerated	0 = Has Faults 1 = Has Warnings 2 = Above Threshold 3 = Operating 4 = Powered Off 5 = Starting Up 6 = Calibrating 7 = Testing 8 - 85 = Reserved 86 - 255 = Payload-specific
<b>0311.12</b>	<b>11</b>	<b>Payload Latitude</b> Indicates the latitude of the payload.	Double	rad	$-\pi/2 \leq x \leq \pi/2$
<b>0311.13</b>	<b>12</b>	<b>Payload Longitude</b> Indicates the longitude of the payload.	Double	rad	$-\pi \leq x \leq \pi$
<b>0311.14</b>	<b>13</b>	<b>Payload Altitude</b> Indicates the altitude of the payload. Distance above (+) or below (-) the WGS-84 reference geoid.	Float	m	$-1,000 \leq x \leq 100,000$
<b>0311.15</b>	<b>14</b>	<b>Background Level</b> Indicates the background level that was either automatically detected by the payload or was manually set using CBRN payload configuration state command.	Double	mSv	$0 \leq x$
<b>0311.16</b>	<b>15</b>	<b>Communication Method</b> Indicates the current communication method used by the payload.	Unsigned 1	Enumerated	0 = Wireless 1 = Wired 2-85 = Reserved 86-255 = Payload-specific

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
0311.20	16	<b>Communication Signal Strength</b>  Where applicable (e.g., Wireless) it indicates the signal strength of the communication method (Unique ID #0311.16) used by the payload.	Unsigned 1	%	x ≤ 100
0311.17	17	<b>Temperature State</b>  Indicates the temperature state of the payload that can be a precondition to its operation.	Unsigned 1	Enumerated	0 = Normal 1 = Warming Up 2 = Cooling Down 3 - 85 = Reserved 86 - 255 = Payload-specific
0311.18	18	<b>Local Alarm Enunciation State</b>  Indicated the local alarm enunciation state.	Unsigned 1	Enumerated	0 = Alarm Silenced 1 = Alarm Activated 2 - 85 = Reserved 86 - 255 = Payload-specific
0311.19	19	<b>Clock</b>  Indicates the payload's internal clock.	Double	s	See Section 1.7.2
0311.21	20	<b>Operating Mode</b>  Indicates the payload operating mode.  Note that "Standby" typically means that agent detection is not possible.	Unsigned 1	Enumerated	0 = Operating 1 = Standby 2 = Training 3 - 85 = Reserved 86 - 255 = Payload-specific
0311.22	21	<b>Sampling State</b>  Indicates the payload sampling state.	Unsigned 1	Enumerated	0 = Idle 1 = Sampling 2 = Sensing Component Test (Confidence Test) 3 = Scanning 4 = Tracking 5 - 85 = Reserved 86 - 255 = Payload-specific

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0311.23	22	<b>Testing State</b> Indicates the testing state of the payload.	Unsigned 1	Enumerated	0 = Not Testing 1 = Self Testing (All Payload Components) 2 = Audio Testing 3 = Control Component Testing 4 = Power Distribution and Interface Logic Component Testing 5 = Sensing Component Test (Confidence Test) 6 = Wireless Comms Component Testing 7 = Dismounted Power Component Testing 8 = User Interface Component Testing (Display Testing) 9 - 85 = Reserved 86 - 255 = Payload-specific

**Table 4 - 61: Message #311: CBRN Payload Operating State****4.1.3.27 Message #312: Payload Scan Window Operating State**

1. The Payload Scan Window Operating State (Message #312) shall be sent by the VSM to the CUCS to report on a given payload scan window configuration state [DLI 0530].
2. This message shall be sent every time the scan operating state changes unless it is already configured to be sent regularly using a Schedule Message Update Command Message (Message #1402) [DLI 0531].
3. This message shall otherwise be sent as a response to the Payload Scan Window Configuration Command (Message #213) [DLI 0532].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0312.01	1	Time Stamp	Double	s	See Section 1.7.2
0312.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0312.03	3	CUCS ID	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0312.04	4	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
0312.05	5	<b>Start Scan Window Azimuth</b>  Indicates the payload's start scan azimuth. Relative to true north.	Float	rad	$0 \leq x \leq 2\pi$
0312.06	6	<b>End Scan Window Azimuth</b>  Indicates the payload's end scan azimuth. Relative to true north.	Float	rad	$0 \leq x \leq 2\pi$
0312.07	7	<b>Scan Window Min Elevation</b>  Indicates the payload's minimum elevation. Relative to local horizontal.	Float	rad	$-\pi/2 \leq x \leq \pi/2$
0312.08	8	<b>Scan Window Max Elevation</b>  Indicates the payload's maximum elevation. Relative to local horizontal.	Float	rad	$-\pi/2 \leq x \leq \pi/2$
0312.09	9	<b>Azimuth Scan Rate</b>  The payload's azimuth scan rate.	Float	rad/s	No Restrictions

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0312.10	10	<b>Elevation Scan Rate</b> The payload's elevation scan rate.	Float	rad/s	No Restrictions
0312.11	11	<b>Scan Mode</b> The payload's scan mode.	Unsigned 1	Enumerated	0 = Horizontal 1 - 85 = Reserved 86 - 255 = Payload-specific
0312.12	12	<b>Actual Azimuth</b> Indicates the payload's actual azimuth.	Float	rad	$0 \leq x \leq 2\pi$
0312.13	13	<b>Actual Elevation</b> Indicates the payload's actual elevation.	Float	rad	$-\pi/2 \leq x \leq \pi/2$
0312.14	14	<b>Scan Radius</b> Indicates the payload's scan radius.  A value of less than 0 indicates that the information is not available.	Float	m	No Restrictions

**Table 4 - 62: Message #312: Payload Scan Window Operating State****4.1.3.28 Message #313: CBRN Payload Detailed Info Response**

The CBRN Payload Detailed Info Response (Message #313) shall be sent by the VSM to the CUCS as a response to CBRN Payload Detailed Info Request (Message #210) if the Command Type (Unique ID #0210.10) is of type "Download" providing the requested information such as logs, and detailed sensor measurements [DLI 0473].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0313.01	1	<b>Time Stamp</b>	Double	s	See Section 1.7.2
0313.02	2	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
0313.03	3	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0313.05	4	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
0313.06	5	<b>Current File Number</b>  Indicates the sequence of the current file being transmitted.  Zero is used if 'Total Number of Files' is set to zero.	Unsigned 2	None	No Restrictions
0313.07	6	<b>Total Number of Files</b>  Indicates the total number of files to be transmitted.  Zero is used if no files could be found that match the criteria in Message #210	Unsigned 2	None	No Restrictions
0313.08	7	<b>File Reference</b>  The file reference is an identifier associated with the detailed information being requested from the given payload station.  Zero is used if 'Total Number of Files' is set to zero.	Unsigned 4	None	No Restrictions

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0313.09	8	<b>Original Message Instance ID</b> The Message Instance ID provides a reference to the original CBRN Payload Detailed Info Request (Message #210). See Section 3.3.1.2.	Unsigned 4	None	No Restrictions

**Table 4 - 63: Message #313: CBRN Payload Detailed Info Response****4.1.3.29 Message #314: CBRN Payload Detailed Info Estimate Response**

The CBRN Payload Detailed Info Estimate Response (Message #314) shall be sent by the VSM to the CUCS as a response to a CBRN Payload Detailed Info Request (Message #210) if the Command Type (Unique ID #0210.10) is of type “Estimate” [DLI 0533].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0314.01	1	<b>Time Stamp</b>	Double	s	See Section 1.7.2
0314.02	2	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
0314.03	3	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5
0314.04	4	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0314.05	5	<b>Original Message Instance ID</b>  The Message Instance ID provides a reference to the original CBRN Payload Detailed Info Request (Message #210).  See Section 3.3.1.2.	Unsigned 4	None	No Restrictions
0314.06	6	<b>Query Response Status</b>  Indicates if the query would return a number of files larger than what the response field type (Unique ID #0313.07) can accommodate.	Unsigned 1	Enumerated	0 = Valid Range 1 = Out of Range 2 - 85 = Reserved 86 - 255 = Payload-specific
0314.07	7	<b>Expected Total Number of Files</b>  Indicates the total expected number of files to be transmitted.  Zero is used if no files could be found that match the criteria in Message #210.  If Unique ID #0314.06 is set to “out of range” then the out of range value can be returned here to give the calling process an indication of the type of adjustments to the query that may be necessary.	Unsigned 2	None	No Restrictions
0314.08	8	<b>Expected Total Size</b>  Indicates the rough estimate for the total size of all files to be transmitted (rounded up or down as needed).  Zero is used if no files could be found that match the criteria in Message #210.	Unsigned 4	None	No Restrictions
0314.09	9	<b>Expected Total Size UoM</b>  Indicates the unit of measurement for the previous field.	Unsigned 1	Enumerated	0 = Byte 1 = Kilobyte 2 = Megabyte 3 - 85 = Reserved 86 - 255 = Payload-specific

**Table 4 - 64: Message #314: CBRN Payload Detailed Info Estimate Response**

#### 4.1.4 Data Link Messages.

##### 4.1.4.1 Data Link Command and Status Messages.

###### 4.1.4.1.1 Message #400: Data Link Set Up Message.

This message shall be used to set up the components of the VDT and/or CDT communication equipment [DLI 0252].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0400.01	1	Time Stamp	Double	s	See Section 1.7.2
0400.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0400.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
0400.04	4	Data Link ID	Integer 4	None	See Section 1.7.5
0400.05	5	Addressed Terminal	Unsigned 1	Enumerated	0 = CDT 1 = VDT
0400.06	6	Select Channel	Unsigned 2	None	No Restrictions
0400.07	7	Select Primary Hop Pattern	Unsigned 1	None	No Restrictions
0400.08	8	Set Forward Link (FL) Carrier Frequency	Float	Hz	No Restrictions
0400.09	9	Set Return Link (RL) Carrier Frequency	Float	Hz	No Restrictions
0400.10	10	Set PN Code	Unsigned 1	None	No Restrictions

**Table 4 - 65: Message #400: Data Link Set Up Message**

###### 4.1.4.1.2 Message #401: Data Link Control Command

This message shall be used to send instructions to the VSM to command the components of the VDT and/or CDT communications equipment [DLI 0253].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0401.01	1	Time Stamp	Double	s	See Section 1.7.2
0401.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0401.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
0401.04	4	Data Link ID	Integer 4	None	See Section 1.7.5
0401.05	5	Addressed Terminal	Unsigned 1	Enumerated	0 = CDT 1 = VDT
0401.06	6	Set Data Link State	Unsigned 1	Enumerated	0 = Turn Off 1 = Rx Only 2 = Tx / Rx 3 = Tx High Power / Rx
0401.07	7	Set Antenna Mode	Unsigned 1	Enumerated	0 = Omni 1 = Directional 2 = Auto
0401.08	8	Communication Security Mode	Unsigned 1	Enumerated	0 = Normal 1 = Zeroize
0401.09	9	Link Channel Priority	Unsigned 1	Enumerated	0 - 255 = Priority (0 highest)

**Table 4 - 66: Message #401: Data Link Control Command**

#### 4.1.4.1.3 Message #402: Pedestal Configuration Message

This message shall be used to configure the location of the CDT pedestal [DLI 0254].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0402.01	1	Time Stamp	Double	s	See Section 1.7.2
0402.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0402.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
0402.04	4	Data Link ID	Integer 4	None	See Section 1.7.5
0402.05	5	Set CDT Latitude	Double	rad	$-\pi/2 \leq x \leq \pi/2$
0402.06	6	Set CDT Longitude	Double	rad	$-\pi \leq x \leq \pi$
0402.07	7	Set CDT Altitude	Float	m	$-1,000 \leq x \leq 100,000$

**Table 4 - 67: Message #402: Pedestal Configuration Message**

#### 4.1.4.1.4 Message #403: Pedestal Control Command

This message shall be used to send instructions to the VSM to command the components of the pedestal [DLI 0255].

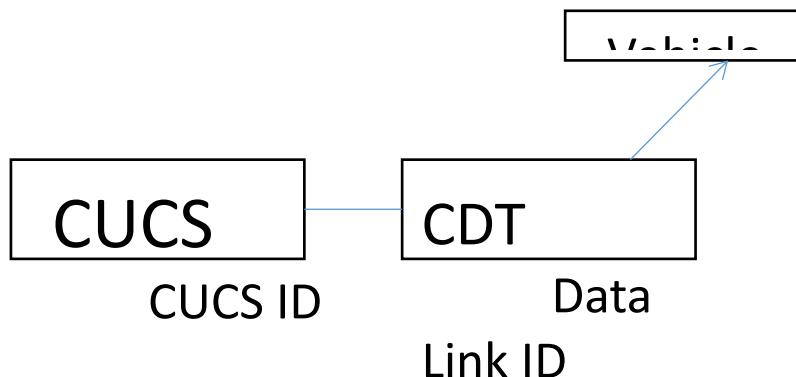
Unique ID	Field	Data Element Name & Description	Type	Units	Range
0403.01	1	Time Stamp	Double	s	See Section 1.7.2
0403.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0403.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
0403.04	4	Data Link ID	Integer 4	None	See Section 1.7.5
0403.05	5	Addressed Pedestal	Unsigned 1	Enumerated	0 = CDT 1 = VDT
0403.06	6	Set Pedestal Mode	Unsigned 1	Enumerated	0 = Turn Off 1 = Turn On 2 = Go To Standby 3 = Deploy 4 = Stow 5 = Manual - Position 6 = Manual - Rate 7 = Acquire (Search) 8 = Track (Auto)
0403.07	7	Set Antenna Azimuth	Float	rad	$0 \leq x \leq 2\pi$
0403.08	8	Set Antenna Elevation	Float	rad	$-\pi/2 \leq x \leq \pi/2$
0403.09	9	Set Azimuth Offset	Float	rad	$0 \leq x \leq 2\pi$
Offset relative to Antenna Azimuth.					
0403.10	10	Set Elevation Offset	Float	rad	$-\pi/2 \leq x \leq \pi/2$
Offset relative to Antenna Elevation.					
0403.11	11	Set Azimuth Slew Rate	Float	rad/s	$-\pi \leq x \leq \pi$
Valid for Manual Rate control mode.					

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0403.12	12	<b>Set Elevation Slew Rate</b> Valid for Manual Rate control mode.	Float	rad/s	$-\pi \leq x \leq \pi$

**Table 4 - 68: Message #403: Pedestal Control Command****4.1.4.1.5 Message #404: Data Link Assignment Request**

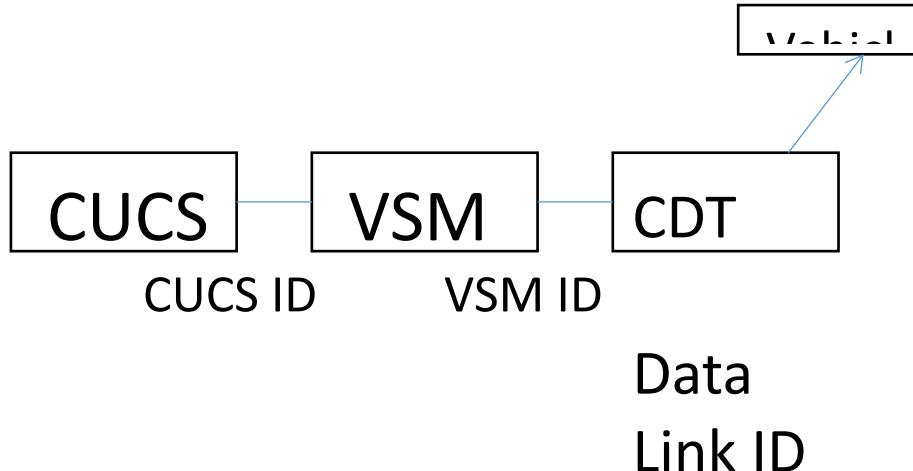
1. When a CUCS is required to communicate with a data link (CDT) in order to transmit and receive messages to and from an UA, the determination of the type and number of data links attached to the system may be required in order for that CUCS to select the data link(s) to communicate with the specified vehicle. Where the CUCS does not know the Data Link ID(s) on the network, the CUCS may conduct a broadcast request for data link information. To conduct a data link broadcast request, the CUCS shall transmit Message #404 with the “Data Link ID” field set to the broadcast address (i.e.; 255.255.255.255), and the VSM ID field set to the broadcast address (i.e.; 255.255.255.255) [DLI 0256]. The Vehicle ID shall be set to the null Vehicle ID when the data link is not being “discovered” for a specific Vehicle ID, or to a specific (logical) Vehicle ID when it is being associated with a specific vehicle or VSM [DLI 0257]. The vehicle type and subtype fields shall be filled appropriate to the request [DLI 0394]. The “Control Assignment Request” field is not applicable to a Broadcast Request, but shall be transmitted as “Release Control” for a Broadcast Request [DLI 0395]. Where the CUCS knows the Data Link ID, the Data Link Assignment Request Message shall be used to request and release control over the Data Link ID for the configuration specified in the message (i.e.; by Vehicle ID, VSM ID, vehicle type, and vehicle subtype) [DLI 0396].

2. The CUCS may request control over a Data Link ID with no associated VSM (i.e., The CDT is connected directly to the network or CUCS, and not through a VSM.). Refer to the following Figure.

**Figure 4 - 10: CUCS CDT Connection**

3. The transmission of the Data Link Assignment Request Message with both a Vehicle ID and a Data Link ID shall be to request or release control of the specified Data Link ID for the specified Vehicle ID in accordance with the “Control Assignment Request” field [DLI 0397]. The VSM ID shall be transmitted as the null ID (i.e., 255.0.0.0) in this instance [DLI 0398]. The CDT with the specified Data Link ID, per Message #404, should intercept and transmit all the other DLI messages with the specified vehicle ID, per Message #404, and forward those messages to the specified vehicle ID and vice versa when the CUCS has control of the data link for the selected vehicle ID.

4. Where a VSM is between the CDT (Data Link ID) and the CUCS, the VSM shall be responsible for transferring the Data Link Command and Status Messages (Section 4.1.4.1) between the specified Data Link ID (CDT) and the CUCS [DLI 0399]. Refer to the following Figure.



**Figure 4 - 11: CUCS VSM CDT Connection**

5. Where all three components of a VSM, data link, and vehicle exist, Message #404 ties these components together through their IDs for control over the specified UA, payload and data link functionality.

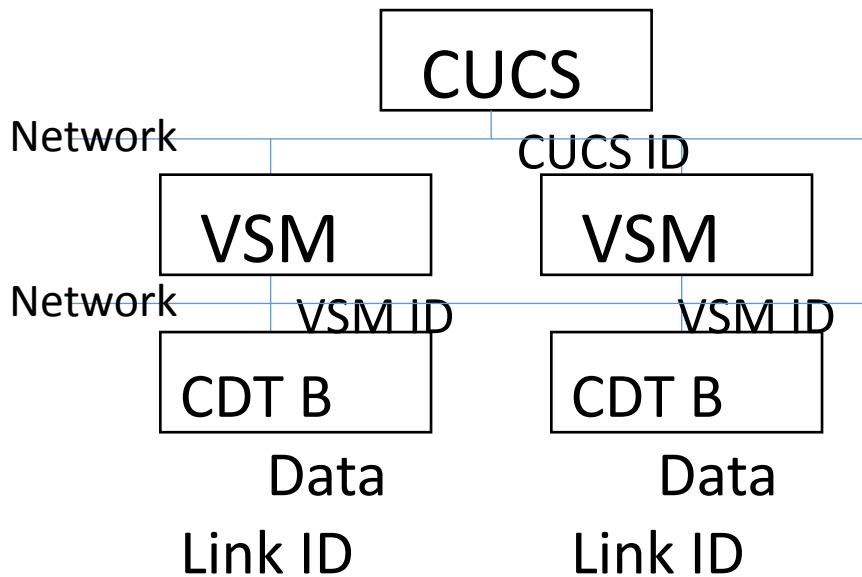
6. The response to this message is Message #500, Data Link Configuration/Assignment Message.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0404.01	1	Time Stamp	Double	s	See Section 1.7.2
0404.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0404.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
0404.04	4	VSM ID	Integer 4	None	See Section 1.7.5
0404.05	5	Data Link ID	Integer 4	None	See Section 1.7.5
0404.06	6	Control Assignment Request	Unsigned 1	Enumerated	0 = Request Control 1 = Release Control 2 = Override Control
0404.07	7	Vehicle Type  Identifies the type name of vehicle; numbers to be assigned by STANAG Custodian.	Unsigned 2	Enumerated	0 - 65535 = See Table 4-11
0404.08	8	Vehicle Subtype  Assigned by manufacturer or other configuration authority.	Unsigned 2	None	No Restrictions

**Table 4 - 69: Message #404: Data Link Assignment Request**

#### 4.1.4.1.6 Message #500: Data Link Configuration/Assignment Message

1. The intent of this message is to provide the CUCS with the data link configuration of the VSM, or network on request from a CUCS, with one instance of this message sent for each employed Data Link ID/Vehicle type/Vehicle Subtype combination.
2. This message shall be transmitted in response to a Message #404 Broadcast Request by appropriately filling this message with the reported Data Link IDs capabilities and setting the “Data Link Control Availability” field with either “Available for Control” or “Unavailable for Control” as appropriate [DLI 0258]. If the data link is already controlled by the CUCS that sent the Broadcast Report, the data link shall set the “Data Link Control Availability” field to “Available for Control” [DLI 0474]. The “Data Link Control Availability” field shall never be set to “Request Granted” in response to a Data Link Broadcast Request [DLI 0400].
3. This message is used by a standalone CDT to identify its capabilities to the CUCS. Refer to Figure 12. Where a real vehicle is not associated (connected) with the CDT, and the CDT is connected directly to the network (CUCS), the null vehicle ID and null VSM ID is transmitted with the supported Vehicle type and Vehicle subtype identified in this message, once for each vehicle type/subtype combination possible. The CDT is responsible for identifying (reporting) the availability of the data link based on the number of vehicle/CUCS connections that are possible versus connected.
4. This message shall be used by a VSM to identify to a CUCS the data link capabilities associated with a VSM, where the data links are attached to the UA’s VSM [DLI 0401]. Refer to Figure 12. Where a real vehicle is not associated (connected) with the CDT, and the CDT is connected through the VSM, the VSM shall assign a “null” Vehicle ID to be transmitted with the supported Vehicle type and Vehicle subtype identified in this message along with the VSM ID to identify the connection [DLI 0259]. This message therefore provides the association between the VSM and data link through their respective IDs as reported in this message. Where a VSM supports more than one vehicle type and vehicle subtype for a single CDT (resource sharing), each instance of support shall be reported to the CUCS with the same Data Link ID, but with different vehicle type and subtypes [DLI 0402].
5. Where a data link is shared between two or more VSMs, physical or logical, the CDT (data link) status shall be the responsibility of the VSMs [DLI 0260]. Refer to the following Figure.

**Figure 4 - 12: Shared Data Links**

6. This message shall be used by the VSM/data link to grant a CUCS control over a specific Data Link ID, report the Data Link ID as unavailable, or to report the successful release/availability of a Data Link ID [DLI 0261]. For each reported Data Link ID/vehicle type/vehicle subtype combination, the VSM/data link shall report the controllability of the data link in the “Data Link Control Availability” field [DLI 0262]. Where the CDT is in control and being used to transmit messages to a vehicle for one of these Data Link ID/vehicle type/vehicle subtype combinations, the Vehicle ID field shall be filled with the controlled Vehicle ID [DLI 0403].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0500.01	1	Time Stamp	Double	s	See Section 1.7.2
0500.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0500.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
0500.04	4	VSM ID	Integer 4	None	See Section 1.7.5
0500.05	5	Data Link ID	Integer 4	None	See Section 1.7.5
0500.06	6	Data Link Control Availability	Unsigned 1	Enumerated	0 = Available for Control 1 = Unavailable for Control 2 = Request Granted
0500.07	7	Terminal Type	Unsigned 1	Enumerated	0 = CDT 1 = VDT
0500.08	8	Data Link Type	Unsigned 1	Enumerated	0 = STANAG 7085 1 - 7 = Reserved 8 - 255 = VSM Specific
0500.09	9	Data Link Name Text identifier for data link.	Character 20	None	No Restrictions
0500.10	10	Antenna Type	Unsigned 1	Bitmapped	0x01 = Omni 0x02 = Directional

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0500.11	11	<b>Vehicle Type</b> Identifies the type name of vehicle; numbers to be assigned by STANAG Custodian.	Unsigned 2	Enumerated	0 - 65535 = See Table 4-11
0500.12	12	<b>Vehicle Subtype</b> Assigned by manufacturer or other configuration authority.	Unsigned 2	None	No Restrictions

**Table 4 - 70: Message #500: Data Link Configuration/Assignment Message****4.1.4.1.7 Message #501: Data Link Status Report**

This message shall be used by the VSM to send the CUCS information on the status of the VDT and/or CDT communications equipment [DLI 0263].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0501.01	1	<b>Time Stamp</b>	Double	s	See Section 1.7.2
0501.02	2	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
0501.03	3	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5
0501.04	4	<b>Data Link ID</b>	Integer 4	None	See Section 1.7.5
0501.05	5	<b>Addressed Terminal</b>	Unsigned 1	Enumerated	0 = CDT 1 = VDT
0501.06	6	<b>Data Link State</b>	Unsigned 1	Enumerated	0 = Off 1 = Rx Only 2 = Tx / Rx 3 = Tx High Power / Rx
0501.07	7	<b>Antenna State</b>	Unsigned 1	Enumerated	0 = Omni 1 = Directional
0501.08	8	<b>Reported Channel</b>	Unsigned 2	None	No Restrictions
0501.09	9	<b>Reported Primary Hop Pattern</b>	Unsigned 1	None	No Restrictions
0501.10	10	<b>Reported Forward Link (FL) Carrier Frequency</b>	Float	Hz	No Restrictions
0501.11	11	<b>Reported Return Link (RL) Carrier Frequency</b>	Float	Hz	No Restrictions
0501.12	12	<b>Downlink Status</b>	Integer 2	%	$0 \leq x \leq 100$
0501.13	13	<b>Communication Security State</b>	Unsigned 1	Enumerated	0 = Not Installed 1 = Not Keyed 2 = Keyed 3 = Zeroized 4 = Bypass
0501.14	14	<b>Link Channel Priority State</b>	Unsigned 1	Enumerated	0 - 255 = Priority (0 highest)

**Table 4 - 71: Message #501: Data Link Status Report**

#### 4.1.4.1.8 Message #502: Data Link Control Command Status

This message is sent from the VSM to the CUCS, and shall report the status of the instructions to the VSM for the command of the components of the data link [DLI 0264].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0502.01	1	Time Stamp	Double	s	See Section 1.7.2
0502.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0502.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
0502.04	4	Data Link ID	Integer 4	None	See Section 1.7.5
0502.05	5	Addressed Terminal	Unsigned 1	Enumerated	0 = CDT 1 = VDT
0502.06	6	Reported Data Link State	Unsigned 1	Enumerated	0 = Turn Off 1 = Rx Only 2 = Tx / Rx 3 = Tx High Power / Rx
0502.07	7	Reported Antenna Mode	Unsigned 1	Enumerated	0 = Omni 1 = Directional 2 = Auto
0502.08	8	Reported Communication Security Mode	Unsigned 1	Enumerated	0 = Normal 1 = Zeroize

**Table 4 - 72: Message #502: Data Link Control Command Status**

#### 4.1.4.1.9 Message #503: Pedestal Status Report

This message shall be used by the VSM to send the CUCS information on the status of the VDT and/or CDT pedestal [DLI 0265].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0503.01	1	Time Stamp	Double	s	See Section 1.7.2
0503.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0503.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
0503.04	4	Data Link ID	Integer 4	None	See Section 1.7.5
0503.05	5	Addressed Pedestal	Unsigned 1	Enumerated	0 = CDT 1 = VDT
0503.06	6	Pedestal Mode State	Unsigned 1	Enumerated	0 = Turn Off 1 = Turn On 2 = Go To Standby 3 = Deploy 4 = Stow 5 = Manual - Position 6 = Manual - Rate 7 = Acquire (Search) 8 = Track (Auto)
0503.07	7	Reported Antenna Azimuth  Relative to true north.	Float	rad	$0 \leq x \leq 2\pi$
0503.08	8	Reported Antenna Elevation  Relative to local horizontal.	Float	rad	$-\pi/2 \leq x \leq \pi/2$

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0503.09	9	<b>Reported Antenna Azimuth Slew Rate</b>	Float	rad/s	$-\pi \leq x \leq \pi$
0503.10	10	<b>Reported Antenna Elevation Slew Rate</b>	Float	rad/s	$-\pi \leq x \leq \pi$
0503.11	11	<b>Reported CDT Latitude</b> Not applicable to VDT.	Double	rad	$-\pi/2 \leq x \leq \pi/2$
0503.12	12	<b>Reported CDT Longitude</b> Not applicable to VDT.	Double	rad	$-\pi \leq x \leq \pi$
0503.13	13	<b>Reported CDT Altitude</b> Not applicable to VDT.	Float	m	$-1,000 \leq x \leq 100,000$
0503.14	14	<b>Reported Azimuth Offset</b> Offset relative to Antenna Azimuth.	Float	rad	$0 \leq x \leq 2\pi$
0503.15	15	<b>Reported Elevation Offset</b> Offset relative to Antenna Elevation.	Float	rad	$-\pi/2 \leq x \leq \pi/2$

**Table 4 - 73: Message #503: Pedestal Status Report**

#### 4.1.4.2 Data Link Transition Messages

The messages in this section allow the CUCS to control the data links and receive the status of the data links. These messages also support UA handover.

##### 4.1.4.2.1 Message #600: Vehicle Data Link Transition Coordination Message

This message shall be used to establish a new data link configuration when transferring from one UCS data link to another UCS data link [DLI 0266].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0600.01	1	<b>Time Stamp</b>	Double	s	See Section 1.7.2
0600.02	2	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
0600.03	3	<b>CUCS ID</b> Controlling	Integer 4	None	See Section 1.7.5
0600.04	4	<b>Data Link ID</b> VDT Data Link ID for UA transition.	Integer 4	None	See Section 1.7.5
0600.05	5	<b>Acquiring CUCS ID</b>	Integer 4	None	See Section 1.7.5
0600.06	6	<b>Set Forward Link (FL) Carrier Frequency (VDT)</b>	Float	Hz	No Restrictions
0600.07	7	<b>Set Return Link (RL) Carrier Frequency (VDT)</b>	Float	Hz	No Restrictions
0600.08	8	<b>Set PN Code (VDT)</b>	Unsigned 1	None	No Restrictions
0600.09	9	<b>Acquiring CDT Latitude</b>	Double	rad	$-\pi/2 \leq x \leq \pi/2$
0600.10	10	<b>Acquiring CDT Longitude</b>	Double	rad	$-\pi \leq x \leq \pi$
0600.11	11	<b>Acquiring CDT Altitude</b>	Float	m	$-1,000 \leq x \leq 100,000$

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0600.12	12	Data Link Time-Out Limit	Double	s	0 ≤ x ≤ 86,400

**Table 4 - 74: Message #600: Vehicle Data Link Transition Coordination****4.1.4.2.2 Message #700: Handover Status Report**

This message shall be used to report the status of the handover procedure [DLI 0267].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0700.01	1	Time Stamp	Double	s	See Section 1.7.2
0700.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0700.03	3	CUCS ID (relinquishing control)	Integer 4	None	See Section 1.7.5
0700.04	4	CUCS ID (acquiring control)	Integer 4	None	See Section 1.7.5
0700.05	5	Status	Unsigned 1	Enumerated	0 = Handover Not Requested 1 = Handover in Progress 2 = Handover Successful 3 = Handover Failed
0700.06	6	Vehicle Data Link ID  Data Link ID for UA transition.	Integer 4	None	See Section 1.7.5

**Table 4 - 75: Message #700: Handover Status Report****4.1.5 Mission Messages**

The messages in this section support transfer of a mission plan between the UA and the CUCS. Mission messages can be sent to/from the UA before and during flight.

**4.1.5.1 Message #800: Mission Transfer Command**

1. The Mission Transfer Command shall be used to control the overall mission transfer and storage of a mission [DLI 0268]. The mission shall be transmitted between a CUCS and VSM as a series of individual waypoints based on Message #802 UA Position Waypoint message, for which there may be a number of optional associated messages [DLI 0269]. The optional associated messages include Message #803, UA Loiter Waypoint, Message #804, Payload Action Waypoint, Message #805, Airframe Action Waypoint, and Message #806, Vehicle Specific Waypoint. A Message #800, Mission Plan Mode “Transmit Mission” command to the UA/VSM shall identify that all mission waypoints have all been transmitted from the CUCS to the VSM [DLI 0404], and the VSM shall transform the mission as required and load it to the UA [DLI 0405].

2. The VSM shall use the General Configuration Messages to define the UA’s capability to support the fields commanded in Message #800 [DLI 0406]. Refer to Section 4.1.7 General Configuration Messages for additional details.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0800.01	1	Time Stamp	Double	s	See Section 1.7.2

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0800.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0800.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
0800.04	4	Mission ID Text Identifier of Mission	Character 20	None	No Restrictions
0800.05	5	Mission Plan Mode	Unsigned 1	Enumerated	1 = Clear Mission 2 = Transmit Mission 3 = Receive Mission 4 = Receive Single Waypoint 5 = Cancel Transmit/Receive
0800.06	6	Waypoint Number	Unsigned 2	None	$1 \leq x \leq 65,534$

**Table 4 - 76: Message #800: Mission Transfer Command****4.1.5.2 Message #801: UA Route**

1. This message shall be used to define a Route Type for an UA route defined by a series of Message #802 UA Position Waypoint Messages [DLI 0270]. If the “Initial Waypoint Number” field in this message is set to 0, the route definition, but not the waypoints, shall be deleted [DLI 0407]. Where routes have been uploaded to an UA without a defined Route Type, the default Route Type shall be “2 = Flight” [DLI 0408].
2. This message shall be transmitted in response to a Message #800, “Receive Mission” request to report the UA route types [DLI 0409].

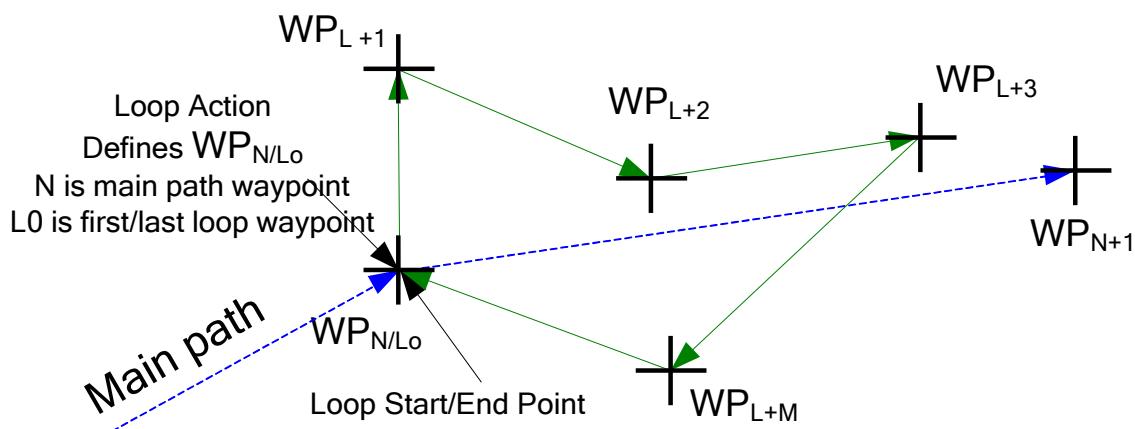
Unique ID	Field	Data Element Name & Description	Type	Units	Range
0801.01	1	Time Stamp	Double	s	See Section 1.7.2
0801.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0801.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
0801.04	4	Initial Waypoint Number First waypoint in defined route.	Unsigned 2	None	$x \leq 65,534$
0801.05	5	Route ID Text identifier of route.	Character 33	None	No Restrictions
0801.06	6	Route Type	Unsigned 1	Enumerated	0 = Launch 1 = Approach 2 = Flight 3 = Contingency A 4 = Contingency B

**Table 4 - 77: Message #801: UA Route****4.1.5.3 Message #802: UA Position Waypoint**

1. This message shall be used by the CUCS to define a single Route, or series of Routes, to be uploaded to the VSM/UA [DLI 0410]. Waypoint numbers forming a route do not need to be contiguous, but the use of contiguous integers is recommended within a route. This message shall be used to define the location the UA will fly to [DLI 0271].
2. This message shall be transmitted from the VSM/UA in response to a Message #800, “Receive Mission” request to report the UA Position Waypoints loaded onboard [DLI 0411].

3. Note for Loop Action:

A Loop Action can be defined by using the Waypoint Type field to direct to a different set of WPs that defines a loop connected to a Waypoint in a route. The Loop Action defines a waypoint, which is the first (and end) loop waypoint. When encountering a Loop Action the UA checks the loop limit condition: if True the UA starts the loop path, if False it continues to fly on the main flight path. While in loop, flying towards initial point the UA again calculates if it can perform the next loop without meeting the limit terms (Limit terms definitions are number of turns or minimum fuel quantity or time pass). The calculation is based on present velocity and fuel flow. If next loop can be performed without meeting limit terms the UA will turn towards the next loop point. Otherwise the UA will continue to the next WP after the loop start/end point ( $WP_{N+1}$  in the following figure).

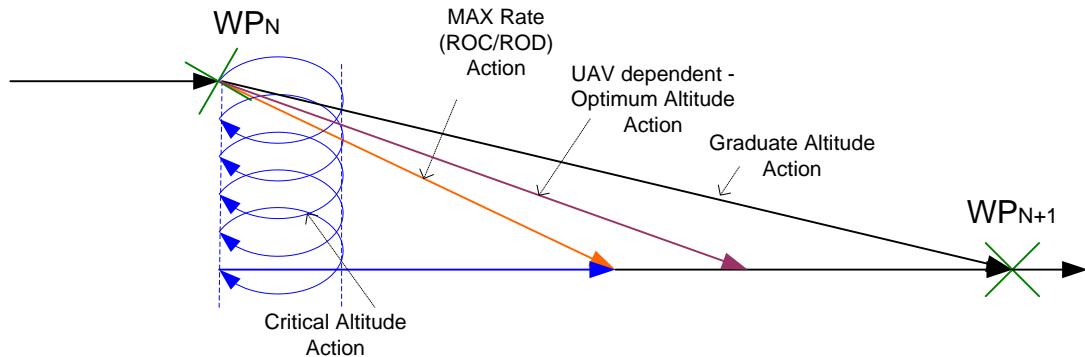


**Figure 4 - 13: Loop Action**

4. Note for Auto Altitude Change Actions:

The Altitude change can be performed either manually by commanding the UA rate of climb/decent, or automatically by commanding the UA Altitude Change Behaviour:

- In case of flight path altitude restriction: The altitude change is immediate in spiral path (See Figure below for critical altitude action) or
- Change altitude gradually towards next navigation point, or
- Change altitude rapidly in Max Rate Of Climb or Max Rate Of Descend along the track to the next waypoint, or
- When attitude in the track is not critical, change altitude according to the UA optimum performance



**Figure 4 - 14: Auto Altitude Change Actions**

5. An UA will change its airspeed, subject to the Message #49, Speed Mode, as it flies to the waypoint. The rate of airspeed change is not defined by this message and is UA specific.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0802.01	1	Time Stamp	Double	s	See Section 1.7.2
0802.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0802.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
0802.04	4	Waypoint Number	Unsigned 2	None	$1 \leq x \leq 65,534$
0802.05	5	Waypoint To Latitude or Relative Y	Double	rad	$-\pi/2 \leq x \leq \pi/2$
0802.06	6	Waypoint to Longitude or Relative X	Double	rad	$-\pi \leq x \leq \pi$
0802.07	7	Location Type	Unsigned 1	Enumerated	0 = Absolute 1 = Relative (See Message #47)
0802.08	8	Waypoint to Altitude	Float	m	$-1,000 \leq x \leq 100,000$
0802.09	9	Waypoint Altitude Type	Unsigned 1	Enumerated	0 = Pressure Altitude 1 = Baro Altitude 2 = AGL 3 = WGS-84
		Defines altitude type for all altitude related fields in the messages for this waypoint.			

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0802.20	10	<b>Altitude Change Behaviour</b>	Unsigned 1	Enumerated	0 = Manual 1 = Critical Altitude 2 = Graduate 3 = Max (ROC/ROD) 4 = UA Dependent (Optimum Performance) 5 = Not Defined
0802.10	11	<b>Waypoint to Speed</b>	Float	m/s	$0 \leq x \leq 10,000$
0802.11	12	<b>Waypoint Speed Type</b>	Unsigned 1	Enumerated	0 = Indicated Airspeed 1 = True Airspeed 2 = Groundspeed 3 = Arrival Time
0802.12	13	<b>Next Waypoint</b>  Next waypoint to fly to when this waypoint is reached. If value = 0, this is the last waypoint in the series.	Unsigned 2	None	$x \leq 65,534$
0802.13	14	<b>Contingency Waypoint A</b>  Waypoint to fly to if a contingency (Type A) requires abandonment of the current mission. If value = 0, the UA will continue with the planned mission.	Unsigned 2	None	$x \leq 65,534$
0802.14	15	<b>Contingency Waypoint B</b>  Waypoint to fly to if a contingency (Type B) requires abandonment of the current mission. If value = 0, the UA will continue with the planned mission.	Unsigned 2	None	$x \leq 65,534$
0802.15	16	<b>Arrival Time</b>	Double	s	See Section 1.7.2
0802.16	17	<b>Turn Type</b>	Unsigned 1	Enumerated	0 = Short Turn 1 = Flyover
0802.17	18	<b>Waypoint Type</b>	Unsigned 1	Enumerated	0 = Regular/In Loop WP 1 = First/End Loop WP
0802.18	19	<b>Limit Type</b>	Unsigned 1	Enumerated	0 = Time Pass 1 = Minimum Fuel 2 = Number of Laps 3 = Bingo Energy

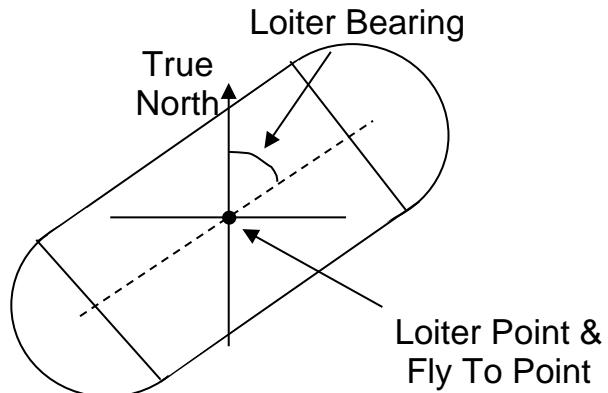
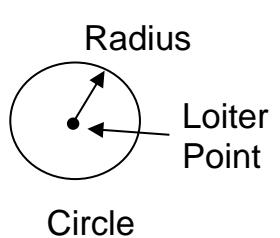
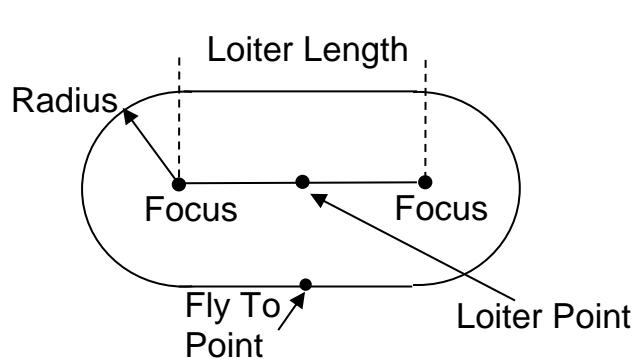
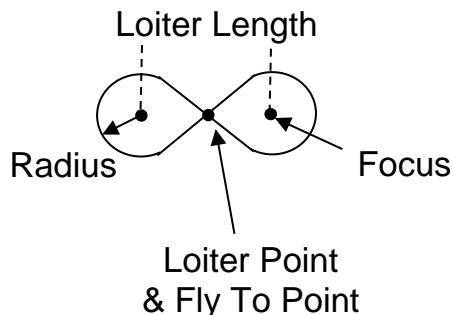
Unique ID	Field	Data Element Name & Description	Type	Units	Range
0802.19	20	<b>Loop Limit</b> If Limit Type = 0, the Loop Limit would use "s" for Units. If Limit Type = 1, the Loop Limit would use "%" for Units. If Limit Type = 2, the Loop Limit would use "a number" for Units. If Limit Type = 3, Loop Limit is ignored.	Unsigned 1	s / Fuel (%) / None (Number)	No Restrictions

**Table 4 - 78: Message #802: UA Position Waypoint****4.1.5.4 Message #803: UA Loiter Waypoint**

1. This message shall be used to define the loiter characteristics the UA will perform once it has arrived at the "Waypoint Number" [DLI 0272].
2. This message shall be transmitted from the VSM/UA in response to a Message #800, "Receive Mission" request to report the loiter characteristics waypoints loaded onboard [DLI 0412].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0803.01	1	<b>Time Stamp</b>	Double	s	See Section 1.7.2
0803.02	2	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
0803.03	3	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5
0803.04	4	<b>Waypoint Number</b>	Unsigned 2	None	$1 \leq x \leq 65,534$
0803.05	5	<b>Waypoint Loiter Time</b> 0 = No Loiter	Unsigned 2	s	No Restrictions
0803.06	6	<b>Waypoint Loiter Type</b>	Unsigned 1	Enumerated	1 = Circular 2 = Racetrack 3 = Figure 8 4 = Hover
0803.07	7	<b>Loiter Radius</b> Used as radius for circular Loiter, else used as the width perpendicular to line between loiter points.	Float	m	$1 \leq x \leq 100,000$
0803.08	8	<b>Loiter Length</b> Used for racetrack and figure 8 to define length of pattern, centred around the Loiter Point (defined in Message #802) in the direction of the Loiter Bearing.	Float	m	$1 \leq x \leq 100,000$

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0803.09	9	<b>Loiter Bearing</b> The bearing of the loiter pattern, referenced to the Loiter Point (defined in Message #802), from True North.	Double	rad	$0 \leq x \leq 2\pi$
0803.10	10	<b>Loiter Direction</b> Defines direction of turn when rounding the loiter point defined by the UA Position Waypoint Message (Message # 802).	Unsigned 1	Enumerated	0 = Vehicle Dependent 1 = Clockwise 2 = Counter-clockwise 3 = Into the Wind

**Table 4 - 79: Message #803: UA Loiter Waypoint****Figure 8****Figure 4 - 15: Loiter Pattern****4.1.5.5 Message #804: Payload Action Waypoint**

1. This message shall be used by the CUCS to define the payload action that will be performed when the UA begins to fly to the waypoint defined by the "Waypoint Number" [DLI 0273].
2. This message shall be transmitted from the VSM/UA in response to a Message #800, "Receive Mission" request to report the Payload Action Waypoints loaded onboard [DLI 0413].

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
<b>0804.01</b>	<b>1</b>	<b>Time Stamp</b>	Double	s	See Section 1.7.2
<b>0804.02</b>	<b>2</b>	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
<b>0804.03</b>	<b>3</b>	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5
<b>0804.04</b>	<b>4</b>	<b>Waypoint Number</b>	Unsigned 2	None	$1 \leq x \leq 65,534$
<b>0804.05</b>	<b>5</b>	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
<b>0804.06</b>	<b>6</b>	<b>Set Sensor 1 Mode</b>	Unsigned 1	Enumerated	0 = Turn Off 1 = Turn On 2 = Go to Standby
<b>0804.07</b>	<b>7</b>	<b>Set Sensor 2 Mode</b>	Unsigned 1	Enumerated	0 = Turn Off 1 = Turn On 2 = Go to Standby
<b>0804.08</b>	<b>8</b>	<b>Sensor Output</b>	Unsigned 1	Enumerated	0 = None 1 = Sensor 1 2 = Sensor 2 3 = Both Sensors

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0804.09	9	<b>Set Sensor Pointing Mode</b>	Unsigned 1	Enumerated	0 = Nil 1 = Angle Relative to UA 2 = Slewing Rate Relative to UA 3 = Slewing Rate Relative to Inertial 4 = Lat-Long Slaved 5 = Target Slaved 6 = Stow 7 = Line Search Start Location 8 = Line Search End Location
0804.10	10	<b>Starepoint Latitude</b>	Double	rad	$-\pi/2 \leq x \leq \pi/2$
0804.11	11	<b>Starepoint Longitude</b>	Double	rad	$-\pi \leq x \leq \pi$
0804.12	12	<b>Starepoint Altitude</b>	Float	m	$-1,000 \leq x \leq 100,000$
0804.13	13	<b>Starepoint Altitude Type</b>  Defines altitude type for previous field.	Unsigned 1	Enumerated	0 = Pressure Altitude 1 = Baro Altitude 2 = AGL 3 = WGS-84
0804.14	14	<b>Payload Az (wrt UA)</b>	Float	rad	$-\pi \leq x \leq \pi$
0804.15	15	<b>Payload El (wrt UA)</b>	Float	rad	$-\pi/2 \leq x \leq \pi/2$
0804.16	16	<b>Payload Sensor Rotation Angle</b>	Float	rad	$-\pi/2 \leq x \leq \pi/2$

**Table 4 - 801: Message #804: Payload Action Waypoint****4.1.5.6 Message #805: Airframe Action Waypoint**

1. This message shall be used by the CUCS to define the airframe action that will be performed when the UA begins to fly to the waypoint defined by the "Waypoint Number" [DLI 0274].
2. This message shall be transmitted from the VSM/UA in response to a Message #800, "Receive Mission" request to report the Airframe Action Waypoints loaded onboard [DLI 0414].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0805.01	1	<b>Time Stamp</b>	Double	s	See Section 1.7.2
0805.02	2	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
0805.03	3	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5
0805.04	4	<b>Waypoint Number</b>	Unsigned 2	None	$1 \leq x \leq 65,534$
0805.05	5	<b>Function</b>	Unsigned 1	Enumerated	1 = Navigation Lights 2 = Strobe Lights 3 = Primary Data Link 4 = Secondary Data Link 5 = Navigation IR Lights 6 = Strobe IR Lights 7 = NVD Compatible 8 = Landing 9 = Landing IR 10 = Reserved 11 - 255 = Vehicle Specific

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0805.06	6	Enumerated State	Unsigned 1	Enumerated	0 = Turn Off 1 = Turn On 2 = Go to Standby 3 = Receive Only 4 = Transmit Only

**Table 4 - 81: Message #805: Airframe Action Waypoint****4.1.5.7 Message #806: Vehicle Specific Waypoint**

This message shall be used to define the vehicle specific action that will be performed when the UA begins to fly to the waypoint [DLI 0275]. This message shall be used to pass Common Route Definition (CRD) messages that cannot be mapped to the generic waypoints defined in this section [DLI 0276]. A waypoint value of zero indicates mission generic data that is not associated with any specific waypoint.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0806.01	1	Time Stamp	Double	s	See Section 1.7.2
0806.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0806.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
0806.04	4	Waypoint Number	Unsigned 2	None	$1 \leq x \leq 65,534$
0806.05	5	Tag Type	Unsigned 1	Enumerated	0 = None 1 = Start Tag 2 = Stop Tag
0806.06	6	Tag/Data	Character 20	None	No Restrictions

**Table 4 - 82: Message #806: Vehicle Specific Waypoint****4.1.5.8 Message #900: Mission Upload/Download Status**

This message shall be used to provide status on a mission upload/download from a VSM to a CUCS [DLI 0277]. If there are no waypoints to transfer when a transfer is requested, the CUCS/VSM shall send this message with a status of complete and percent complete of 100 [DLI 0475].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
0900.01	1	Time Stamp	Double	s	See Section 1.7.2
0900.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
0900.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
0900.04	4	Status	Unsigned 1	Enumerated	0 = In Progress 1 = Complete 2 = Aborted/Rejected
0900.05	5	Percent Complete	Unsigned 1	%	$x \leq 100$

**Table 4 - 83: Message #900: Mission Upload/Download Status****4.1.6 Subsystems Status Messages**

- The common message set includes summary health and status information for use by CUCS status displays. This information need not convey detailed, configuration-specific health

and status information, but should provide the CUCS with overall health summary data suitable for annunciation on the console using conventional colour codes (Green=Nominal, Yellow=Caution, Red= Warning, Black=Failed or Out-of-service). In the event of a system caution or warning, vehicle or configuration-specific status messages can provide detailed diagnostic information peculiar to that configuration.

2. Support is provided for up to four engines and primary and auxiliary support systems. These messages shall provide health and status overview information only in an interoperable context [DLI 0278]. Detailed status information about particular subsystems shall be a vehicle-specific message type [DLI 0279].

#### **4.1.6.1 Message #1000: Subsystem Status Request**

This message shall be used by the CUCS to request subsystem information from the VSM [DLI 0280].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
<b>1000.01</b>	<b>1</b>	<b>Time Stamp</b>	Double	s	See Section 1.7.2
<b>1000.02</b>	<b>2</b>	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
<b>1000.03</b>	<b>3</b>	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1000.04	4	<b>Subsystem ID</b>  Identifier associated with the subsystem for which status information is being requested.	Unsigned 4	Bitmapped	0x00000001 = Engine 0x00000002 = Mechanical 0x00000004 = Electrical 0x00000008 = Comms 0x00000010 = Propulsion Energy 0x00000020 = Navigation 0x00000040 = Payload 0x00000080 = Recovery System 0x00000100 = Environmental Control System 0x00000200 = VSM Status 0x00000400 = VDT 0x00000800 = CDT 0x00001000 = Reserved 1 0x00002000 = Reserved 2 0x00004000 = Reserved 3 0x00008000 = Reserved 4 0x00010000 = Reserved 5 0x00020000 = Reserved 6 0x00040000 = Reserved 7 0x00080000 = Reserved 8 0x00100000 = VSM Specific 1 0x00200000 = VSM Specific 2 0x00400000 = VSM Specific 3 0x00800000 = VSM Specific 4 0x01000000 = VSM Specific 5 0x02000000 = VSM Specific 6 0x04000000 = VSM Specific 7 0x08000000 = VSM Specific 8 0x10000000 = VSM Specific 9 0x20000000 = VSM Specific 10 0x40000000 = VSM Specific 11 0x80000000 = VSM Specific 12

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1000.05	5	Station Number	Unsigned 4	Bitmapped	0x00000000 = UA Platform (Does not include Payload Stations) 0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

**Table 4 - 84: Message #1000: Subsystem Status Request****4.1.6.2 Message #1001: Subsystem Status Detail Request**

This message shall be used by the CUCS to request more information from the VSM/UA/CDT/VDT about a specific subsystem status report [DLI 0281]. The VSM/UA/CDT/VDT shall respond using a vehicle specific service specified in Section 1.7.4 [DLI 0282].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1001.01	1	Time Stamp	Double	s	See Section 1.7.2
1001.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
1001.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
1001.05	4	Data Link ID	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1001.04	5	<b>Subsystem State Report Reference</b>  The Report Reference is the vehicle specific information reference previously provided by the VSM, where -1 = No More Info Available.	Integer 4	None	-1 ≤ x

**Table 4 - 85: Message #1001: Subsystem Status Detail Request****4.1.6.3 Message #1100: Subsystem Status Alert Message**

1. This message shall be used by the VSM to create a Subsystem Status Alert [DLI 0283]. Examples are:

- “Engine #3 Failure”
- “Engine #3 Cylinder Head Temp > 280C, currently 295 C”

2. Subsystem State Report Reference shall be assigned by the VSM [DLI 0284]. The purpose of this field is to provide a reference number for subsequent requests for more information. If the CUCS requires additional information, the CUCS shall respond with a request using Message #1001 [DLI 0285]. Alert messages of Type 1 (Not clearable by operator) can be cleared by the VSM sending the alert with a priority of 0.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1100.01	1	<b>Time Stamp</b>	Double	s	See Section 1.7.2
1100.02	2	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
1100.03	3	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5
1100.04	4	<b>Priority</b>	Unsigned 1	Enumerated	0 = Cleared 1 = Nominal 2 = Caution 3 = Warning 4 = Emergency 5 = Failed
1100.05	5	<b>Subsystem State Report Reference</b>  Identifier associated with a particular report associated with the specified subsystem. Used to request particular status information from the VSM, where -1 = No More Info Available.	Integer 4	None	-1 ≤ x

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1100.06	6	<b>Subsystem ID</b>  Identifier associated with the subsystem for which status information is being reported.	Unsigned 1	Enumerated	0 = Engine 1 = Mechanical 2 = Electrical 3 = Comms 4 = Propulsion Energy 5 = Navigation 6 = Payload 7 = Recovery System 8 = Environmental Control System 9 = VSM Status 10 = VDT 11 = CDT 12 - 19 = Reserved 20 - 31 = VSM Specific
1100.07	7	<b>Type</b>	Unsigned 1	Enumerated	0 = Clear 1 = Not Clearable By Operator 2 = Clearable By Operator 3 = Display For Fixed Time Then Automatically Clear
1100.08	8	<b>Alert ID</b>  The Alert ID is used to update alert messages that have been previously sent to the CUCCS from the VSM.  First Instance set to -<Alert ID>.  Note: Alert ID is a unique value generated by the VSM for use when additional Message #1100s are sent about the same alert. The first instance is always a negative value and all subsequent values are positive (e.g. -123, 123, 123, ...).	Integer 4	None	No Restrictions
1100.09	9	<b>Text</b>	Character 80	None	No Restrictions
1100.10	10	<b>Persistence</b>  This field determines the minimum time an alert will be displayed. This time is referenced to when this message is received by the CUCCS.  <0 = Not defined 0 = Clear immediately >0 = Display for at least this many seconds.	Integer 1	s	No Restrictions

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1100.11	11	Station Number	Unsigned 4	Bitmapped	0x00000000 = UA Platform (Does not include Payload Stations) 0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
1100.12	12	Message Type	Unsigned 1	Enumerated	0 = New/Update Alert 1 = Append to Alert
1100.13	13	Append Order	Unsigned 1	None	No Restrictions
1100.14	14	Append Total Number	Unsigned 1	None	No Restrictions

**Table 4 - 86: Message #1100: Subsystem Status Alert****4.1.6.4 Message #1101: Subsystem Status Report**

This message shall be used by the VSM/UA/CDT/VDT to produce a Subsystem Status Report [DLI 0287]. Configuration of the Subsystem ID field in this message shall be defined by the configuration of the Message #1000, Subsystem ID [DLI 0288].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1101.01	1	Time Stamp	Double	s	See Section 1.7.2
1101.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
1101.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
1101.11	4	Data Link ID	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1101.04	5	<b>Subsystem ID</b>  Identifier associated with the subsystem for which status information is being reported. IDs above 20 are used for vehicle and payload specific subsystems.	Unsigned 1	Enumerated	0 = Engine 1 = Mechanical 2 = Electrical 3 = Comms 4 = Propulsion Energy 5 = Navigation 6 = Payload 7 = Recovery System 8 = Environmental Control System 9 = VSM Status 10 = VDT 11 = CDT 12 - 19 = Reserved 20 - 31 = VSM Specific
1101.05	6	<b>Subsystem State</b>	Unsigned 1	Enumerated	0 = No Status 1 = Nominal 2 = Caution 3 = Warning 4 = Emergency 5 = Failed
1101.06	7	<b>Subsystem State Report Reference</b>  The Report Reference is the Vehicle Specific information reference, provided by the VSM/UA/CDT/VDT, which the CUSS can use to request additional information from the VSM/UA/CDT/VDT on the reported alert, where -1 = No More Info Available.	Integer 4	None	-1 ≤ x

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1101.07	8	Station Number	Unsigned 4	Bitmapped	0x00000000 = UA Platform (Does not include Payload Stations) 0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

**Table 4 - 87: Message #1101: Subsystem Status Report**

#### 4.1.7 General Configuration Messages

##### 4.1.7.1 Message #1200: Field Configuration Request

This message shall be used by the CUCS to initiate and, if required, abort the transmission of the DLI field related configuration parameter information from the VSM, vehicle or data link, for a specified LOI, for a specified Data Link ID, Vehicle ID (specific or logical) or specific payload station, or to request the configuration of a single parameter [DLI 0289]. The CUCS uses this message to update DLI parameter configuration data at the CUCS, and to potentially control the display of information. The VSM shall respond with one or more Field Configuration Integer Response (Message #1300) Message(s), Field Configuration Unsigned Response (Message #1305) Message(s), Field Configuration Double Response (Message #1301) Message(s), Field Configuration Enumerated Response (Message #1302) Message(s), Field Configuration Command (Message #1303) Message(s) or Vehicle Steering/Operating Mode Configuration (Message #1306) Message(s) with the static configuration for each of the configuration items specified in this document that are supported by the VSM [DLI 0291].

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
<b>1200.01</b>	<b>1</b>	<b>Time Stamp</b>	Double	s	See Section 1.7.2
<b>1200.02</b>	<b>2</b>	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
<b>1200.03</b>	<b>3</b>	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5
<b>1200.04</b>	<b>4</b>	<b>VSM ID</b>	Integer 4	None	See Section 1.7.5
<b>1200.05</b>	<b>5</b>	<b>Data Link ID</b>	Integer 4	None	See Section 1.7.5
<b>1200.06</b>	<b>6</b>	<b>Request Type</b>	Unsigned 1	Enumerated	0 = Single Parameter 1 = LOI 2 2 = LOI 3 3 = LOI 4 4 = LOI 5 5 = Data Link 6 = Abort Configuration
<b>1200.07</b>	<b>7</b>	<b>Requested Message</b>  See Table 4-5  0 = N/A	Unsigned 4	None	No Restrictions
<b>1200.08</b>	<b>8</b>	<b>Requested Field</b>  0 = N/A	Unsigned 1	None	No Restrictions
<b>1200.09</b>	<b>9</b>	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
<b>1200.10</b>	<b>10</b>	<b>Sensor Select</b>	Unsigned 1	Enumerated	0 = N/A 1 = Sensor 1 2 = Sensor 2 3 = Sensor 3

**Table 4 - 88: Message #1200: Field Configuration Request****4.1.7.2 Message #1201: Display Unit Request**

The CUCS shall use the Display Unit Request message to identify the display units that the VSM/UA/CDT/VDT is required to use in Remote Displays for that CUCS [DLI 0292]. The VSM/UA/CDT/VDT shall accept this message from the CUCS anytime the CUCS has a valid connection with the VSM/UA/CDT/VDT to control functionality [DLI 0415].

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1201.01	1	Time Stamp	Double	s	See Section 1.7.2
1201.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
1201.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
1201.04	4	VSM ID	Integer 4	None	See Section 1.7.5
1201.14	5	Data Link ID	Integer 4	None	See Section 1.7.5
1201.05	6	Distance	Unsigned 1	Enumerated	0 = Meters 1 = Feet
1201.06	7	Altitude	Unsigned 1	Enumerated	0 = Meters 1 = Feet
1201.07	8	Speed	Unsigned 1	Enumerated	0 = Meters/Second 1 = Knots 2 = MPH 3 = Km/Hour
1201.08	9	Position (Latitude, Longitude)	Unsigned 1	Enumerated	0 = Degrees 1 = UTM 2 = MGRS
1201.09	10	Temperature	Unsigned 1	Enumerated	0 = Centigrade 1 = Fahrenheit
1201.10	11	Mass/Weight	Unsigned 1	Enumerated	0 = Kg 1 = Pounds
1201.11	12	Angles	Unsigned 1	Enumerated	0 = Radians 1 = Degrees
1201.12	13	Pressure - Barometric	Unsigned 1	Enumerated	0 = mb 1 = inHg 2 = Pascals
1201.13	14	Fuel Quantity	Unsigned 1	Enumerated	0 = Litres 1 = Pounds 2 = Kg

**Table 4 - 89: Message #1201: Display Unit Request****4.1.7.3 Message #1202: CUCS Resource Report**

This message shall be used to communicate to the VSM/UA/data link the resources available within the CUCS for managing remote displays to be presented at the CUCS [DLI 0293]. This message shall be transmitted from the CUCS to the VSM/UA/data link to authorise the VSM/UA/data link to present the Remote Displays to the CUCS [DLI 0294]. The VSM/UA/data link shall transmit Remote Displays to the CUCS in accordance with the contents of this message only after the reception of this message from a CUCS [DLI 0295].

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1202.01	1	Time Stamp	Double	s	See Section 1.7.2

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1202.02	2	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
1202.03	3	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5
1202.04	4	<b>VSM ID</b>	Integer 4	None	See Section 1.7.5
1202.05	5	<b>Data Link ID</b>	Integer 4	None	See Section 1.7.5
1202.06	6	<b>Web Browser Available</b>  The only valid value for this field is “1”. This field will be deleted in future Editions of STANAG 4586 since it only has one value.	Unsigned 1	Enumerated	1 = Yes
1202.07	7	<b>Java Engine Available</b>  The only valid value for this field is “1”. This field will be deleted in future Editions of STANAG 4586 since it only has one value.	Unsigned 1	Enumerated	1 = Yes
1202.08	8	<b>Spare</b>	Unsigned 1	None	No Restrictions
1202.09	9	<b>X Window Server Available</b>  The only valid value for this field is “1”. This field will be deleted in future Editions of STANAG 4586 since it only has one value.	Unsigned 1	Enumerated	1 = Yes
1202.10	10	<b>(X Window) Display Number</b>	Integer 1	None	No Restrictions
1202.11	11	<b>(X Window) Screen Number</b>	Integer 1	None	No Restrictions
1202.12	12	<b>Vertical Offset from Top Left Corner</b>  Location of top corner of remote display.	Unsigned 2	Pixels	No Restrictions
1202.13	13	<b>Horizontal Offset from Top Left Corner</b>  Location of left corner of remote display.	Unsigned 2	Pixels	No Restrictions
1202.14	14	<b>Display Window Horizontal Width (Pixels)</b>	Unsigned 2	Pixels	No Restrictions
1202.15	15	<b>Display Window Vertical Height (Pixels)</b>	Unsigned 2	Pixels	No Restrictions
1202.16	16	<b>CUCS IP Address</b>	Unsigned 4	None	No Restrictions

**Table 4 - 90: Message #1202: CUCS Resource Report****4.1.7.4 Message #1203: Configuration Complete**

The VSM/UA/data link shall use the Configuration Complete Message to identify that all configuration messages have been sent from the VSM/UA/data link to the CUCS as requested with Message #1200 Field Configuration Request, for the identified VSM, UA, data link, or payload station [DLI 0296]. The CUCS shall use this message to identify that configuration of

the CUCS is complete as requested based on the received 13xx Messages, 100, and 301 Messages and any messages requested by Message #1403 during configuration [DLI 0447]. If the configuration messages require an acknowledgement, this message shall not be sent until all the requested acknowledgements have been received or a time out has occurred [DLI 0476].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1203.01	1	Time Stamp	Double	s	See Section 1.7.2
1203.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
1203.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
1203.04	4	VSM ID	Integer 4	None	See Section 1.7.5
1203.05	5	Data Link ID	Integer 4	None	See Section 1.7.5
1203.06	6	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
1203.07	7	Vehicle Type  Identifies the type name of vehicle; numbers to be assigned by STANAG Custodian.	Unsigned 2	Enumerated	0 - 65535 = See Table 4-11
1203.08	8	Vehicle Subtype  Assigned by manufacturer or other configuration authority.	Unsigned 2	None	No Restrictions

Table 4 - 91: Message #1203: Configuration Complete

#### 4.1.7.5 Message #1300: Field Configuration Integer Response

1. This message shall be transmitted from the VSM/UA/data link to the CUCS after the reception of Message #1200 as required for each of the parameters within the list (below) that are required per an LOI configuration request, and supported by the VSM (i.e., based on the Request type for LOI) [DLI 0297]. The LOI for each of the referenced parameters in the list shall be in accordance with Table 4-5, Message Summary and Properties for the referenced messages (e.g., Message #104 is an LOI 4/5 message therefore parameter Message #104, Power Level is an LOI 4/5 parameter required in response to an LOI 4/5 configuration request) [DLI 0416]. This message shall be transmitted from the VSM/UA/data link to the CUCS after the reception of Message #1200 in response to a single parameter request from the CUCS if configuration information is available for the requested parameter [DLI 0298].
2. This message shall define the level of support provided to the CUCS for control over a specified commanded DLI message parameter, or for the reporting of a DLI message parameter, of size Integer, by the VSM/UA/data link filling in the message for the requested parameter and transmitting it to the CUCS [DLI 0417]. Where the VSM/UA/data link does not support a requested parameter, this message shall be sent with the "Field Supported" parameter filled as "Field Not Supported" [DLI 0418].
3. The CUCS will use this information to configure the display and control of VSM data elements. If no configuration message is received by the CUCS during the VSM response(s) to Message #1200, the CUCS will display the field with its full range enabled.
4. This message may be sent from the VSM/vehicle/data link to the CUCS anytime the controllable state of a commanded DLI message parameter changes thus altering the allowable states of control over the specified parameter at the VSM.
5. Where the VSM/UA/data link uses this message to report a DLI message parameter, the CUCS shall present the Cautions and Warnings to the operator in accordance with the message for the specified parameter [DLI 0419]. The High Caution Limit and Low Caution limit shall be equivalent to Message #1100, Priority enumeration of "Caution" [DLI 0420]. The High Warning Limit and Low Warning limit shall be equivalent to Message #1100, Priority enumeration of "Warning" [DLI 0421]. The VSM shall not present these same warnings [DLI 0422].
6. The CUCS, as a minimum, shall support the reception of following DLI message parameters from a VSM/UA/data link [DLI 0299]:
  - Message #41, Altitude Change Behaviour
  - Message #104, Power Level
  - Message #104, Flap Deployment Angle
  - Message #104, Speed Brake Deployment Angle
  - Message #400, Select Channel
  - Message #400, Select Primary Hop Pattern
  - Message #400, Set PN Code
  - Message #802, Waypoint Number
  - Message #802, Altitude Change Behaviour

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1300.01	1	Time Stamp	Double	s	See Section 1.7.2
1300.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1300.03	3	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5
1300.04	4	<b>VSM ID</b>	Integer 4	None	See Section 1.7.5
1300.05	5	<b>Data Link ID</b>	Integer 4	None	See Section 1.7.5
1300.06	6	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
1300.07	7	<b>Requested Message</b> See Table 4-5	Unsigned 4	None	$1 \leq x$
1300.08	8	<b>Requested Field</b>	Unsigned 1	None	$1 \leq x$
1300.09	9	<b>Field Supported</b>	Unsigned 1	Enumerated	0 = Field Not Supported 1 = Field Supported
1300.10	10	<b>Max Value</b> Maximum valid value for the field.	Integer 4	None	No Restrictions
1300.11	11	<b>Min Value</b> Minimum valid value for the field.	Integer 4	None	No Restrictions
1300.12	12	<b>Max Display Value</b> Recommended maximum value that should be displayed. This value may be larger than the Max Value.	Integer 4	None	No Restrictions

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1300.13	13	<b>Min Display Value</b> Recommended minimum value that should be displayed. This value may be smaller than the Min Value.	Integer 4	None	No Restrictions
1300.14	14	<b>Minimum Display Resolution</b> Requested, but not required, minimum display change where the display shows discrete values. This does not imply the minimum resolution of the actual value or the internal resolution.	Integer 4	None	No Restrictions
1300.15	15	<b>High Caution Limit</b> Minimum value that will cause a Caution.	Integer 4	None	No Restrictions
1300.16	16	<b>High Warning Limit</b> Minimum value that will cause a Warning.	Integer 4	None	No Restrictions
1300.17	17	<b>Low Caution Limit</b> Maximum value that will cause a Caution.	Integer 4	None	No Restrictions
1300.18	18	<b>Low Warning Limit</b> Maximum value that will cause a Warning.	Integer 4	None	No Restrictions
1300.19	19	<b>Help Text</b>	Character 80	None	No Restrictions
1300.20	20	<b>Subsystem ID</b> Identifier subsystem for which this field is associated.	Unsigned 1	Enumerated	0 = Engine 1 = Mechanical 2 = Electrical 3 = Comms 4 = Propulsion Energy 5 = Navigation 6 = Payload 7 = Recovery System 8 = Environmental Control System 9 = VSM Status 10 = VDT 11 = CDT 12 - 18 = Reserved 19 = Not Assigned 20 - 31 = VSM Specific
1300.21	21	<b>Route Type</b> Identifies which route type(s) this configuration applies for mission messages.	Unsigned 1	Bitmapped	0x01 = Launch 0x02 = Approach 0x04 = Flight 0x08 = Contingency A 0x10 = Contingency B

**Table 4 - 92: Message #1300: Field Configuration Integer Response****4.1.7.6 Message #1301: Field Configuration Double Response**

1. This message shall be transmitted from the VSM/UA/data link to the CUCS after the reception of Message #1200 as required for each of the parameters within the list (below) that are required by the LOI configuration request (i.e., based on the Request type for LOI) [DLI 0301]. The LOI for each of the referenced parameters in the list shall be in accordance with Table 4-5, Message Summary and Properties for the referenced messages (e.g., Message #49 is an LOI 4/5 message therefore parameter Message #49, Commanded Altitude is an LOI 4/5 parameter required in response to an LOI 4/5 configuration request) [DLI 0302]. This message shall be transmitted from the VSM/vehicle/data link to the CUCS after the reception of Message #1200 in response to a single parameter request from the CUCS, if configuration information is available for the requested parameter [DLI 0423].
2. This message shall define the level of support provided to the CUCS for control over a specified commanded DLI message parameter, or for the reporting of a DLI message parameter, of size float/double, by the VSM/UA/data link filling in the message for the requested DLI message parameter(s) and transmitting it to the CUCS [DLI 0424]. Where the VSM does not support a DLI message parameter, this message shall be sent with the “Field Supported” parameter filled as “Field Not Supported” [DLI 0425].
3. The CUCS will use this information to configure the display and control of VSM data elements. If no configuration message is received by the CUCS during the VSM response(s) to Message #1200, the CUCS will display the field with its full range enabled.
4. This message may be sent from the VSM/vehicle/data link to the CUCS anytime the controllable state of a commanded DLI message parameter changes thus altering the allowable states of control over the specified parameter at the VSM.
5. Where the VSM/UA/data link uses this message to report a DLI message parameter, the CUCS shall present the Cautions and Warnings to the operator in accordance with the message for the specified parameter [DLI 0426]. The High Caution Limit and Low Caution Limit shall be equivalent to Message #1100, Priority enumeration of “Caution” [DLI 0427]. The High Warning Limit and Low Warning Limit shall be equivalent to Message #1100, Priority enumeration of “Warning” [DLI 0428]. The VSM shall not present these same warnings on to the operator [DLI 0429].
6. The CUCS, as a minimum, shall support the reception of the following DLI message parameters from a VSM/UA/data link [DLI 0303]:
  - Message #41, Loiter Radius
  - Message #41, Loiter Length
  - Message #41 Loiter Altitude
  - Message #41 Loiter Speed
  - Message #49, Commanded Altitude
  - Message #49, Commanded Vertical Speed
  - Message #49, Commanded Turn Rate
  - Message #49, Commanded Roll Rate
  - Message #49, Commanded Speed
  - Message #49, Altimeter Setting
  - Message #49, Commanded Roll

- Message #101, Altitude
- Message #101, Phi (Roll)
- Message #101, Theta (Pitch)
- Message #101, Phi\_dot (Roll Rate)
- Message #101, Theta\_dot (Pitch Rate)
- Message #101, Psi\_dot (Yaw Rate)
- Message #101, U\_Speed
- Message #101, V\_Speed
- Message #101, W\_Speed
- Message #101, U\_Accel
- Message #101, V\_Accel
- Message #101, W\_Accel
- Message #102, Angle of Attack
- Message #102, Angle of Sideslip
- Message #102, Indicated Airspeed
- Message #102, True Airspeed
- Message #102, Outside Air Temperature
- Message #102, Altimeter Setting
- Message #102, Barometric Altitude
- Message #102, Barometric Altitude Rate
- Message #102, U\_Ground
- Message #102, V\_Ground
- Message #103, X\_Body\_Accel
- Message #103, Y\_Body\_Accel
- Message #103, Z\_Body\_Accel
- Message #103, Roll\_Rate
- Message #103, Pitch\_Rate
- Message #103, Yaw\_Rate
- Message #104, Current Propulsion Energy Level
- Message #104, Current Propulsion Energy Usage Rate
- Message #104, Commanded Roll
- Message #105, Engine Speed
- Message #200, Set Horizontal Field of View
- Message #200, Set Vertical Field of View
- Message #200, Horizontal Slew Rate
- Message #200, Vertical Slew Rate
- Message #200, Altitude
- Message #302, Reported Range
- Message #400, Set Forward Link Carrier Frequency
- Message #400, Set Return Link Carrier Frequency

- Message #402, Set CDT Altitude
- Message #403, Set Antenna Azimuth
- Message #403, Set Azimuth Offset
- Message #403, Set Elevation Offset
- Message #403, Set Antenna Elevation
- Message #403, Set Azimuth Slew Rate
- Message #403, Set Elevation Slew Rate
- Message #802, Waypoint to Speed
- Message #802, Waypoint to Altitude
- Message #803 Loiter Radius

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1301.01	1	Time Stamp	Double	s	See Section 1.7.2
1301.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
1301.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
1301.04	4	VSM ID	Integer 4	None	See Section 1.7.5
1301.05	5	Data Link ID	Integer 4	None	See Section 1.7.5
1301.06	6	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
1301.07	7	Requested Message See Table 4-5	Unsigned 4	None	1 ≤ x
1301.08	8	Requested Field	Unsigned 1	None	1 ≤ x

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1301.09	9	<b>Field Supported</b>	Unsigned 1	Enumerated	0 = Field Not Supported 1 = Field Supported
1301.10	10	<b>Max Value</b>  Maximum valid value for the field.	Double	None	No Restrictions
1301.11	11	<b>Min Value</b>  Minimum valid value for the field.	Double	None	No Restrictions
1301.12	12	<b>Max Display Value</b>  Recommended maximum value that should be displayed. This value may be larger than the Max Value.	Double	None	No Restrictions
1301.13	13	<b>Min Display Value</b>  Recommended minimum value that should be displayed. This value may be smaller than the Min Value.	Double	None	No Restrictions
1301.14	14	<b>Minimum Resolution</b>  Requested, but not required, minimum display change where the display shows discrete values. This does not imply the minimum resolution of the actual value or the internal resolution.	Double	None	No Restrictions
1301.15	15	<b>High Caution Limit</b>  Minimum value that will cause a Caution.	Double	None	No Restrictions
1301.16	16	<b>High Warning Limit</b>  Minimum value that will cause a Warning.	Double	None	No Restrictions
1301.17	17	<b>Low Caution Limit</b>  Maximum value that will cause a Caution.	Double	None	No Restrictions
1301.18	18	<b>Low Warning Limit</b>  Maximum value that will cause a Warning.	Double	None	No Restrictions
1301.19	19	<b>Help Text</b>	Character 80	None	No Restrictions

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1301.20	20	<b>Subsystem ID</b> Identifier subsystem for which this field is associated.	Unsigned 1	Enumerated	0 = Engine 1 = Mechanical 2 = Electrical 3 = Comms 4 = Propulsion Energy 5 = Navigation 6 = Payload 7 = Recovery System 8 = Environmental Control System 9 = VSM Status 10 = VDT 11 = CDT 12 - 18 = Reserved 19 = Not Assigned 20 - 31 = VSM Specific
1301.21	21	<b>Route Type</b> Identifies which route type(s) this configuration applies for mission messages.	Unsigned 1	Bitmapped	0x01 = Launch 0x02 = Approach 0x04 = Flight 0x08 = Contingency A 0x10 = Contingency B

**Table 4 - 93: Message #1301: Field Configuration Double Response****4.1.7.7 Message #1302: Field Configuration Enumerated Response**

1. This message shall be transmitted from the VSM/UA/data link to the CUCS after the reception of Message #1200 as required for the parameters within the list (below) in accordance with LOI configuration request (i.e., based on the Request type for LOI, only if the complete enumerated field or bit field is NOT supported by the VSM/UA/data link [DLI 0305]). Message #1303, Field Configuration Command, is used to identify if individual enumerations within an enumerated field are supported or not.
2. The LOI for each of the referenced parameters in the list shall be in accordance with Table 4-5, Message Summary and Properties for the referenced messages (e.g., Message #49 is an LOI 4/5 message therefore parameter Message #49, Select Flight Path Control Mode is an LOI 4/5 parameter required in response to an LOI 4/5 configuration request if it is not supported by the VSM/UA/data link) [DLI 0430].
3. This message shall be transmitted from the VSM/UA/data link to the CUCS after the reception of Message #1200 in response to a single parameter request from the CUCS, if configuration information is available for the requested parameter [DLI 0431]. Where the VSM/UA/data link does not support a DLI message parameter, this message shall be sent with the “Field Supported” parameter filled as “Field Not Supported” [DLI 0432].
4. The CUCS shall use this message to configure the User Interface for the display or control of VSM/UA/data link information [DLI 0306]. If no configuration message is received by the CUCS during the VSM response(s) to Message #1200, the CUCS will display the field with its full range enabled.
5. The CUCS, as a minimum, shall support the reception of the following DLI message parameters from a VSM/UA/data link [DLI 0308]:
  - Message #44, Set Lights
  - Message #45, Engine Command
  - Message #46, Flight Termination Mode
  - Message #49, Select Flight Path Control Mode

- Message #49, Altitude Command Type
  - Message #49, Heading Command Type
  - Message #49, Speed Type
  - Message #49, Altitude Type
  - Message #49, Commanded Altitude
  - Message #49, Commanded Vertical Speed
  - Message #49, Commanded Heading
  - Message #49, Commanded Course
  - Message #49, Commanded Turn Rate
  - Message #49, Commanded Roll Rate
  - Message #49, Commanded Roll
  - Message #49, Commanded Airspeed
  - Message #106, Select Flight Path Control Mode
  - Message #200, Set Focus
  - Message #500, Data Link Type
  - Message #805, Function
  - Message #1000, Subsystem ID
6. This message provides the capability to configure enumerated fields where there is no generic enumerated listing for the parameter, or to extend the set of enumerated values where vehicle specific values are available. Where an enumerated field contains a vehicle specific or VSM specific listing and a VSM/UA/data link requires using this capability, this message shall be used by the VSM/UA/data link to extend that listing [DLI 0433]. This message shall not be used to alter a generic enumerated listing [DLI 0309]. Reserved and specific enumerations (e.g., payload specific), that are not defined shall be disabled [DLI 0477].
7. For bit fields, e.g. 0x0001, 0x0002, 0x0004, 0x0008, the right most bit (0x0001) shall be considered Enumeration Index 0 [DLI 0434].

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1302.01	1	Time Stamp	Double	s	See Section 1.7.2
1302.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
1302.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
1302.04	4	VSM ID	Integer 4	None	See Section 1.7.5
1302.05	5	Data Link ID	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1302.06	6	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
1302.07	7	<b>Requested Message</b> See Table 4-5	Unsigned 4	None	$1 \leq x$
1302.08	8	<b>Requested Field</b>	Unsigned 1	None	$1 \leq x$
1302.09	9	<b>Field Supported</b>	Unsigned 1	Enumerated	0 = Field Not Supported 1 = Field Supported
1302.10	10	<b>Enumeration Count</b>	Unsigned 1	None	No Restrictions
1302.11	11	<b>Enumeration Index</b>	Unsigned 1	None	No Restrictions
1302.12	12	<b>Enumeration Text</b> Text To Display For Selected Enumeration.	Character 16	None	No Restrictions
1302.13	13	<b>Help Text</b>	Character 80	None	No Restrictions
1302.14	14	<b>Route Type</b> Identifies which route type(s) this configuration applies for mission messages.	Unsigned 1	Bitmapped	0x01 = Launch 0x02 = Approach 0x04 = Flight 0x08 = Contingency A 0x10 = Contingency B

**Table 4 - 94: Message #1302: Field Configuration Enumerated Response****4.1.7.8 Message #1303: Field Configuration Command**

1. This message shall be transmitted from the VSM/UA/data link to the CUCS after the reception of Message #1200 as required for each of the parameters within the list (below) that

are required by the LOI configuration request (i.e., based on the Request type for LOI [DLI 0311]. The LOI for each of the referenced parameters in the list shall be in accordance with Table 4 - 5, Message Summary and Properties for the reference messages (e.g., Message #49 is an LOI 4/5 message therefore parameter Message #49, Altitude Mode is an LOI 4/5 parameter required in response to an LOI 4/5 configuration request) [DLI 0435]. This message shall define the level of support provided to the CUCS for control over a specified commanded DLI data element [DLI 0312]. This message shall report whether or not an enumerated parameter is supported in part (i.e., if not all the enumerations in an enumerated field are supported by the VSM, they are identified by instances of this message in response to the Message #1200 configuration request) [DLI 0313]. This message shall be used by the CUCS to configure any components associated with the control of the referenced DLI message parameter [DLI 0314]. If no configuration message is received by the CUCS during the VSM response(s) to Message #1200, the CUCS will display the field with its full range enabled.

2. This message shall be sent from the VSM to the CUCS anytime the controllable state of a commanded DLI message parameter, or an enumeration within an enumerated DLI message parameter, changes thus altering the allowable states of control over the specified parameter at the VSM (i.e., the VSM reports if a DLI message field is currently available to control or if it is unavailable (Field Available) and if specific enumerations within an enumerated data element field are available or unavailable for control) [DLI 0315].

3. In summary, the VSM/vehicle/data link supports this message for the DLI data element fields in the following situations:

- Where the VSM does not support each of the enumerations within an enumerated data element;
- Where the state of a data element may change as identified within this message, both enumerated and regular fields (float, integer fields).

4. The CUCS, as a minimum, shall support the reception of the following mandatory DLI message parameters from the VSM/UA/data link [DLI 0317]:

- Message #41, Speed Type
- Message #41, Loiter Type
- Message #41, Loiter Direction
- Message #41, Altitude Type
- Message #44, Set Lights
- Message #45, Engine Command
- Message #47, Altitude Type
- Message #49, Select Flight Path Control Mode
- Message #49, Altitude Command Type
- Message #49, Heading Command Type
- Message #49, Speed Type
- Message #49, Altitude Type
- Message #49, Commanded Altitude
- Message #49, Commanded Vertical Speed
- Message #49, Commanded Heading
- Message #49, Commanded Course
- Message #49, Commanded Turn Rate

- Message #49, Commanded Roll Rate
- Message #49, Commanded Roll
- Message #49, Commanded Airspeed
- Message #49, Altitude Mode
- Message #49, Speed Mode
- Message #49, Heading Mode
- Message #200, Altitude Type
- Message #201, System Operating Mode
- Message #201, Set EO Sensor Mode
- Message #201, Set IR Polarity
- Message #201, Set EO/IR Pointing Mode
- Message #202, Set Radar State
- Message #202, Set MTI Radar Mode
- Message #203, Active Weapon Mode Command
- Message #203, Target Altitude Type
- Message #204, Set Relay State
- Message #401, Set Data Link State
- Message #401, Set Antenna Mode
- Message #401, Communication Security Mode
- Message #403, Set Pedestal Mode
- Message #500, Data Link Type
- Message #500, Antenna Type
- Message #800, Mission Plan Mode
- Message #802, Waypoint Altitude Type
- Message #802, Waypoint Speed Type
- Message #803, Loiter Direction
- Message #804, Set Sensor Pointing Mode
- Message #804, Set Sensor 1 Mode
- Message #804, Set Sensor 2 Mode
- Message #804, Starepoint Altitude Type
- Message #805, Function
- Message #805, Enumerated State
- Message #1000, Subsystem ID
- Message #1100, Subsystem ID
- Message #1101, Subsystem ID

5. For bit fields (e.g., 0x0001, 0x0002, 0x0004, 0x0008), the right most bit (0x0001) shall be considered Enumeration Index 0 [DLI 0448].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1303.01	1	Time Stamp	Double	s	See Section 1.7.2

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
<b>1303.02</b>	<b>2</b>	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
<b>1303.03</b>	<b>3</b>	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5
<b>1303.11</b>	<b>4</b>	<b>VSM ID</b>	Integer 4	None	See Section 1.7.5
<b>1303.04</b>	<b>5</b>	<b>Data Link ID</b>	Integer 4	None	See Section 1.7.5
<b>1303.05</b>	<b>6</b>	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
<b>1303.06</b>	<b>7</b>	<b>Reported Message</b> See Table 4-5	Unsigned 4	None	$1 \leq x$
<b>1303.07</b>	<b>8</b>	<b>Reported Field</b> 0 = Message Not Supported. >0 = Field Identifier	Unsigned 1	None	No Restrictions
<b>1303.08</b>	<b>9</b>	<b>Field Available</b> If Reported Field = 0, then the entire message is not supported.	Unsigned 1	Enumerated	0 = Not Available for Selection 1 = Available for Selection
<b>1303.09</b>	<b>10</b>	<b>Reported Enumerated Index</b> Reported enumerated index for enumerated fields. Controlled By "Field Available".	Unsigned 1	None	No Restrictions

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1303.10	11	<b>Enumerated Index Enable</b>	Integer 1	Enumerated	-2 = Not Implemented -1 = State Unavailable for Selection 0 = State Available for Selection
1303.12	12	<b>Route Type</b> Identifies which route type(s) this configuration applies for mission messages.	Unsigned 1	Bitmapped	0x01 = Launch 0x02 = Approach 0x04 = Flight 0x08 = Contingency A 0x10 = Contingency B

**Table 4 - 95: Message #1303: Field Configuration Command****4.1.7.9 Message #1304: VSM Services Report Message**

1. This message shall be used to communicate to the CUCS the remote display services provided by the VSM/UA/CDT/VDT to the CUCS [DLI 0436]. It defines the home page and FTP location, if these services are provided. This message shall be sent after the VSM/UA/CDT/VDT receives the CUCS Resource Report (Message #1202) and has done any needed setup or initialization of its services [DLI 0478]. Once this message has been received by the CUCS, the CUCS can browse to the VSM/UA/CDT/VDT's home page.
2. If the Data Link ID is not Null then this message shall provide the home page and FTP location of a CDT or VDT [DLI 0514]. If the Data Link ID is Null, this message shall provide the home page and FTP location for a VSM/UA [DLI 0515].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1304.01	1	<b>Time Stamp</b>	Double	s	See Section 1.7.2
1304.02	2	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
1304.03	3	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5
1304.06	4	<b>VSM ID</b>	Integer 4	None	See Section 1.7.5
1304.07	5	<b>Data Link ID</b>	Integer 4	None	See Section 1.7.5
1304.04	6	<b>Home Web Page URL</b> An empty string indicates that the service is not provided.	Character 245	None	No Restrictions
1304.05	7	<b>FTP URL</b> An empty string indicates that the service is not provided.	Character 245	None	No Restrictions

**Table 4 - 96: Message #1304: VSM Services Report Message****4.1.7.10 Message #1305: Field Configuration Unsigned Response**

1. This message shall be transmitted from the VSM/UA/data link to the CUCS after the reception of Message #1200 as required for parameters supported by the VSM (i.e., based on the Request type for LOI) [DLI 0488]. The LOI for each of the referenced parameters shall be in accordance with Table 4-5, Message Summary and Properties for the referenced messages [DLI 0489] (e.g., Message #209 is an LOI 3 message therefore parameter Message #209, Set Sampling Interval is an LOI 3 parameter appropriate in a response to an LOI 3 configuration

request). This message shall be transmitted from the VSM/UA/data link to the CUCS after the reception of Message #1200 in response to a single parameter request from the CUCS if configuration information is available for the requested parameter [DLI 0490].

2. This message shall define the level of support provided to the CUCS for control over a specified commanded DLI message parameter, or for the reporting of a DLI message parameter, of size unsigned, by the VSM/UA/data link filling in the message for the requested parameter and transmitting it to the CUCS [DLI 0491]. Where the VSM/UA/data link does not support a requested parameter, this message shall be sent with the "Field Supported" parameter filled as "Field Not Supported" [DLI 0492.]

3. The CUCS will use this information to configure the display and control of VSM data elements. If no configuration message is received by the CUCS during the VSM response(s) to Message #1200, the CUCS will display the field with its full range enabled.

4. This message may be sent from the VSM/vehicle/data link to the CUCS anytime the controllable state of a commanded DLI message parameter changes thus altering the allowable states of control over the specified parameter at the VSM.

5. Where the VSM/UA/data link uses this message to report a DLI message parameter, the CUCS shall present the Cautions and Warnings to the operator in accordance with the message for the specified parameter [DLI 0493]. The High Caution Limit and Low Caution Limit shall be equivalent to Message #1100, Priority enumeration of "Caution" [DLI 0494]. The High Warning Limit and Low Warning Limit shall be equivalent to Message #1100, Priority enumeration of "Warning" [DLI 0495]. The VSM shall not present these same warnings [DLI 0496].

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1305.01	1	Time Stamp	Double	s	See Section 1.7.2
1305.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
1305.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
1305.04	4	VSM ID	Integer 4	None	See Section 1.7.5
1305.05	5	Data Link ID	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1305.06	6	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
1305.07	7	<b>Requested Message</b> See Table 4-5	Unsigned 4	None	$1 \leq x$
1305.08	8	<b>Requested Field</b>	Unsigned 1	None	$1 \leq x$
1305.09	9	<b>Field Supported</b>	Unsigned 1	Enumerated	0 = Field Not Supported 1 = Field Supported
1305.10	10	<b>Max Value</b> Maximum valid value for the field.	Unsigned 4	None	No Restrictions
1305.11	11	<b>Min Value</b> Minimum valid value for the field.	Unsigned 4	None	No Restrictions
1305.12	12	<b>Max Display Value</b> Recommended maximum value that should be displayed. This value may be larger than the Max Value.	Unsigned 4	None	No Restrictions

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1305.13	13	<b>Min Display Value</b> Recommended minimum value that should be displayed. This value may be smaller than the Min Value.	Unsigned 4	None	No Restrictions
1305.14	14	<b>Minimum Display Resolution</b> Requested, but not required, minimum display change where the display shows discrete values. This does not imply the minimum resolution of the actual value or the internal resolution.	Unsigned 4	None	No Restrictions
1305.15	15	<b>High Caution Limit</b> Minimum value that will cause a Caution.	Unsigned 4	None	No Restrictions
1305.16	16	<b>High Warning Limit</b> Minimum value that will cause a Warning.	Unsigned 4	None	No Restrictions
1305.17	17	<b>Low Caution Limit</b> Maximum value that will cause a Caution.	Unsigned 4	None	No Restrictions
1305.18	18	<b>Low Warning Limit</b> Maximum value that will cause a Warning.	Unsigned 4	None	No Restrictions
1305.19	19	<b>Help Text</b>	Character 80	None	No Restrictions
1305.20	20	<b>Subsystem ID</b> Identifier subsystem for which this field is associated.	Unsigned 1	Enumerated	0 = Engine 1 = Mechanical 2 = Electrical 3 = Comms 4 = Propulsion Energy 5 = Navigation 6 = Payload 7 = Recovery System 8 = Environmental Control System 9 = VSM Status 10 = VDT 11 = CDT 12 - 18 = Reserved 19 = Not Assigned 20 - 31 = VSM Specific
1305.21	21	<b>Route Type</b> Identifies which route type(s) this configuration applies for mission messages.	Unsigned 1	Bitmapped	0x01 = Launch 0x02 = Approach 0x04 = Flight 0x08 = Contingency A 0x10 = Contingency B

**Table 4 - 97: Message #1305: Field Configuration Unsigned Response**

#### 4.1.7.11 Message #1306: Vehicle Steering/Operating Mode Configuration.

1. This message shall be sent by the VSM to define the availability of important vehicle steering control parameters for specific vehicle operating modes [DLI 0516]. The CUCS shall use the last received #1306 Message for a particular vehicle operating mode:
  - When determining which vehicle steering control parameters are available upon entry into that operating mode [DLI 0517].
  - To set the initial vehicle steering control parameters upon entry into that operating mode [DLI 0518].
2. Entry into an operating mode shall be defined as:
  - The CUCS requests a transition to a new vehicle operating mode [DLI 0519], or
  - The vehicle reports uncommanded transition into a new vehicle operating mode [DLI 0520], or
  - When a CUCS is granted LOI4 or LOI 5 control of a vehicle [DLI 0521]
3. If a vehicle denies a request to change vehicle operating mode, then the CUCS shall revert the changes it has made to the steering control parameters and their availability [DLI 0522]
4. The VSM shall send Message #1306 during the configuration download sequence initiated by Message #1200 (Field Configuration Request) and ending with Message #1203 (Configuration Complete) [DLI 0523].
5. The VSM shall send Message #1306 anytime that the availability or the initial entry value of a vehicle steering control parameter for a specific flight mode changes [DLI 0524].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1306.01	1	Time Stamp	Double	s	See Section 1.7.2
1306.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
1306.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
1306.04	4	VSM ID	Integer 4	None	See Section 1.7.5
1306.05	5	Vehicle Operating Mode  Refer to Message #49: Vehicle Operating Mode and Steering Command. 0 = All Modes	Unsigned 1	None	No Restrictions
1306.06	6	Absolute Altitude Command Type Availability  Defines availability of Unique ID #0043.04 Enumeration 1 for the specified Vehicle Operating Mode.	Unsigned 1	Enumerated	0 = Not Available 1 = Available

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1306.07	7	<b>Vertical Speed Altitude Command Type Availability</b>  Defines availability of Unique ID #0043.04 Enumeration 2 for the specified Vehicle Operating Mode.	Unsigned 1	Enumerated	0 = Not Available 1 = Available
1306.08	8	<b>Rate-Limited Altitude Command Type Availability</b>  Defines availability of Unique ID #0043.04 Enumeration 3 for the specified Vehicle Operating Mode.	Unsigned 1	Enumerated	0 = Not Available 1 = Available
1306.09	9	<b>Altitude Command Type Entry Value</b>  Unique ID #0043.04 will be set to this value upon entry into the specified Vehicle Operating Mode.	Unsigned 1	Enumerated	0 = No Valid Altitude Command 1 = Altitude 2 = Vertical Speed 3 = Rate-Limited Altitude
1306.10	10	<b>Heading Command Type Availability</b>  Defines availability of Unique ID #0043.07 Enumeration 1 for the specified Vehicle Operating Mode.	Unsigned 1	Enumerated	0 = Not Available 1 = Available
1306.11	11	<b>Course Command Type Availability</b>  Defines availability of Unique ID #0043.07 Enumeration 2 for the specified Vehicle Operating Mode.	Unsigned 1	Enumerated	0 = Not Available 1 = Available
1306.12	12	<b>Heading And Course Command Type Availability</b>  Defines availability of Unique ID #0043.07 Enumeration 3 for the specified Vehicle Operating Mode.	Unsigned 1	Enumerated	0 = Not Available 1 = Available
1306.13	13	<b>Roll Command Type Availability</b>  Defines availability of Unique ID #0043.07 Enumeration 4 for the specified Vehicle Operating Mode.	Unsigned 1	Enumerated	0 = Not Available 1 = Available

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1306.14	14	<b>Heading Rate Command Type Availability</b>  Defines availability of Unique ID #0043.07 Enumeration 5 for the specified Vehicle Operating Mode.	Unsigned 1	Enumerated	0 = Not Available 1 = Available
1306.15	15	<b>Heading Command Type Entry Value</b>  Unique ID #0043.07 will be set to this value upon entry into the specified Vehicle Operating Mode.	Unsigned 1	Enumerated	0 = No Valid Heading Command 1 = Heading 2 = Course 3 = Heading and Course 4 = Roll 5 = Heading Rate
1306.16	16	<b>Indicated/Calibrated Airspeed Availability</b>  Defines availability of Unique ID #0043.14 Enumeration 0 for the specified Vehicle Operating Mode.	Unsigned 1	Enumerated	0 = Not Available 1 = Available
1306.17	17	<b>True Airspeed Availability</b>  Defines availability of Unique ID #0043.14 Enumeration 1 for the specified Vehicle Operating Mode.	Unsigned 1	Enumerated	0 = Not Available 1 = Available
1306.18	18	<b>Ground Speed Availability</b>  Defines availability of Unique ID #0043.14 Enumeration 2 for the specified Vehicle Operating Mode.	Unsigned 1	Enumerated	0 = Not Available 1 = Available
1306.19	19	<b>Speed Type Entry Value</b>  Unique ID #0043.14 will be set to this value upon entry into the specified Vehicle Operating Mode.	Unsigned 1	Enumerated	0 = Indicated/Calibrated Airspeed 1 = True Airspeed 2 = Ground Speed
1306.20	20	<b>Pressure Altitude Availability</b>  Defines availability of Unique ID #0043.17 Enumeration 0 for the specified Vehicle Operating Mode.	Unsigned 1	Enumerated	0 = Not Available 1 = Available
1306.21	21	<b>Baro Altitude Availability</b>  Defines availability of Unique ID #0043.17 Enumeration 1 for the specified Vehicle Operating Mode.	Unsigned 1	Enumerated	0 = Not Available 1 = Available

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1306.22	22	<b>AGL Altitude Availability</b> Defines availability of Unique ID #0043.17 Enumeration 2 for the specified Vehicle Operating Mode.	Unsigned 1	Enumerated	0 = Not Available 1 = Available
1306.23	23	<b>WGS-84 Altitude Availability</b> Defines availability of Unique ID #0043.17 Enumeration 3 for the specified Vehicle Operating Mode.	Unsigned 1	Enumerated	0 = Not Available 1 = Available
1306.24	24	<b>Altitude Type Entry Value</b> Unique ID #0043.17 will be set to this value upon entry into the specified Vehicle Operating Mode.	Unsigned 1	Enumerated	0 = Pressure Altitude 1 = Baro Altitude 2 = AGL 3 = WGS-84
1306.25	25	<b>Configuration Altitude Mode Availability</b> Defines availability of Unique ID #0048.04 Enumeration 0 for the specified Vehicle Operating Mode.	Unsigned 1	Enumerated	0 = Not Available 1 = Available
1306.26	26	<b>Manual/Override Until Reaching The Waypoint Or Loiter Point Altitude Mode Availability</b> Defines availability of Unique ID #0048.04 Enumeration 1 for the specified Vehicle Operating Mode.	Unsigned 1	Enumerated	0 = Not Available 1 = Available
1306.27	27	<b>Manual/Override Altitude Mode Availability</b> Defines availability of Unique ID #0048.04 Enumeration 2 for the specified Vehicle Operating Mode.	Unsigned 1	Enumerated	0 = Not Available 1 = Available
1306.28	28	<b>Altitude Mode Entry Value</b> Unique ID #0048.04 will be set to this value upon entry into the specified Vehicle Operating Mode.	Unsigned 1	Enumerated	0 = Configuration 1 = Manual/Override Until Reaching the Waypoint or Loiter Point 2 = Manual/Override
1306.29	29	<b>Configuration Speed Mode Availability</b> Defines availability of Unique ID #0048.05 Enumeration 0 for the specified Vehicle Operating Mode.	Unsigned 1	Enumerated	0 = Not Available 1 = Available

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1306.30	30	<b>Manual/Override Until Reaching The Waypoint Or Loiter Point Speed Mode Availability</b>  Defines availability of Unique ID #0048.05 Enumeration 1 for the specified Vehicle Operating Mode.	Unsigned 1	Enumerated	0 = Not Available 1 = Available
1306.31	31	<b>Manual/Override Speed Mode Availability</b>  Defines availability of Unique ID #0048.05 Enumeration 2 for the specified Vehicle Operating Mode.	Unsigned 1	Enumerated	0 = Not Available 1 = Available
1306.32	32	<b>Speed Mode Entry Value</b>  Unique ID #0048.05 will be set to this value upon entry into the specified Vehicle Operating Mode.	Unsigned 1	Enumerated	0 = Configuration 1 = Manual/Override Until Reaching the Waypoint or Loiter Point 2 = Manual/Override
1306.33	33	<b>Configuration Heading Mode Availability</b>  Defines availability of Unique ID #0048.06 Enumeration 0 for the specified Vehicle Operating Mode.	Unsigned 1	Enumerated	0 = Not Available 1 = Available
1306.34	34	<b>Manual/Override Until Reaching The Waypoint Or Loiter Point Heading Mode Availability</b>  Defines availability of Unique ID #0048.06 Enumeration 1 for the specified Vehicle Operating Mode.	Unsigned 1	Enumerated	0 = Not Available 1 = Available
1306.35	35	<b>Manual/Override Heading Mode Availability</b>  Defines availability of Unique ID #0048.06 Enumeration 2 for the specified Vehicle Operating Mode.	Unsigned 1	Enumerated	0 = Not Available 1 = Available
1306.36	36	<b>Heading Mode Entry Value</b>  Unique ID #0048.06 will be set to this value upon entry into the specified Vehicle Operating Mode.	Unsigned 1	Enumerated	0 = Configuration 1 = Manual/Override Until Reaching the Waypoint or Loiter Point 2 = Manual/Override

**Table 4 - 98: Message #1306: Vehicle Steering Configuration**

#### 4.1.8 Miscellaneous Message Types

##### 4.1.8.1 Message #1400: Message Acknowledgement

1. This message shall be used to acknowledge receipt of a message that requires acknowledgement as specified by the Message Acknowledge bit in the message wrapper [DLI 0318].
2. The null ID shall be used for an ID that is not applicable during an instance of transmission of this message [DLI 0437].
3. Messages that contain a Wrapper Error as defined in Section 3.3.1.10 shall not be acknowledged [DLI 0479].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1400.01	1	Time Stamp	Double	s	See Section 1.7.2
1400.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
1400.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
1400.04	4	VSM ID	Integer 4	None	See Section 1.7.5
1400.05	5	Data Link ID	Integer 4	None	See Section 1.7.5
1400.06	6	Original Message Time Stamp	Double	s	See Section 1.7.2
1400.07	7	Original Message Instance ID	Unsigned 4	None	No Restrictions
1400.08	8	Original Message Type	Unsigned 4	None	No Restrictions
1400.09	9	Acknowledgement Type  An Ack Type of 2, 3 or 4 may be sent after an Ack Type 1 or can be sent without a preceding Ack Type 1.	Unsigned 1	Enumerated	0 = Message Received (no additional Message #1400 for this request) 1 = Message Received, but Not Completed (may receive another #1400 of Ack Type 2, 3 or 4) 2 = Message Received and Completed 3 = Message Received, but Rejected 4 = Message Received, but Failed

Table 4 - 99: Message #1400: Message Acknowledgement

##### 4.1.8.2 Message #1401: Message Acknowledge Configuration (Obsolete and deleted)

Message #1401 was used to schedule message acknowledgement. It is no longer needed since an acknowledgement bit is in the header of each message.

##### 4.1.8.3 Message #1402: Schedule Message Update Command

1. This message shall be used to request that the specified message be sent at a given frequency [DLI 0320]. The effect of this message is to make the requested message a “push” type message, but without requesting each pull individually. The Scheduled Message Update Command shall be valid until another Message #1402 is received for that message type or until a Message #21 Relinquish Control Message has been transmitted from the VSM, UA or data link to terminate the connection or the connection has been lost [DLI 0480].
2. The null ID shall be used for an ID that is not applicable during an instance of transmission of this message [DLI 0449].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1402.01	1	Time Stamp	Double	s	See Section 1.7.2
1402.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
1402.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
1402.06	4	VSM ID	Integer 4	None	See Section 1.7.5
1402.07	5	Data Link ID	Integer 4	None	See Section 1.7.5
1402.04	6	Requested Message Type	Unsigned 4	None	$1 \leq x$
1402.05	7	Frequency 0 = Cancel Automatic Send of Requested Message.	Float	Hz	$0 \leq x \leq 100$

**Table 4 - 1002: Message #1402: Schedule Message Update Command****4.1.8.4 Message #1403: Generic Information Request Message**

1. This message shall be used to request the VSM, UA, data link or CUCS to send the specified message [DLI 0321]. This message shall not be used to request Message #1300, Message #1301, Message #1302, Message #1303 or Message #1306, as those are specifically requested with Message #1200 [DLI 0441].
2. The null ID shall be used for an ID that is not applicable during an instance of transmission of this message [DLI 0442].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1403.01	1	Time Stamp	Double	s	See Section 1.7.2
1403.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
1403.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
1403.04	4	VSM ID	Integer 4	None	See Section 1.7.5
1403.05	5	Data Link ID	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1403.06	6	Station Number	Unsigned 4	Bitmapped	0x00000000 = N/A 0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
1403.07	7	<b>Message Type</b> Type number of the message being requested See Table 4-5	Unsigned 4	None	$1 \leq x$

**Table 4 - 101: Message #1403: Generic Information Request Message**

#### 4.1.9 IFF/SSR Command and Status Messages

##### 4.1.9.1 Message #1500: IFF/SSR Code Command

1. This message shall be used to set the Identify, Friend or Foe (IFF) and Secondary Surveillance Radar (SSR) parameters and is sent by the CUCS [DLI 0322].
2. Octal values shall be packed in the 6 or 12 least significant bits of the field (e.g., Octal 1234 would be stored as 0x029C, or 668 decimal) [DLI 0481].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1500.01	1	Time Stamp	Double	s	See Section 1.7.2
1500.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
1500.03	3	CUCS ID	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1500.04	4	<b>Mode 1 Code</b> Note: If both Unique ID#s 1500.04 and 1500.19 are enabled then they should be consistent.	Integer 1	None	0 ≤ x ≤ 3 (First Digit 0, 2nd Digit 0..3) 8 ≤ x ≤ 11 (First Digit 1, 2nd Digit 0..3) 16 ≤ x ≤ 19 (First Digit 2, 2nd Digit 0..3) 24 ≤ x ≤ 27 (First Digit 3, 2nd Digit 0..3) 32 ≤ x ≤ 35 (First Digit 4, 2nd Digit 0..3) 40 ≤ x ≤ 43 (First Digit 5, 2nd Digit 0..3) 48 ≤ x ≤ 51 (First Digit 6, 2nd Digit 0..3) 56 ≤ x ≤ 59 (First Digit 7, 2nd Digit 0..3)
1500.05	5	<b>Mode 1 Enable</b>	Unsigned 1	Enumerated	0 = Off 1 = On
1500.06	6	<b>Mode 2 Code</b>	Integer 2	None	0 ≤ x ≤ 4,095 (Octal 0000 to 7777)
1500.07	7	<b>Mode 2 Enable</b>	Unsigned 1	Enumerated	0 = Off 1 = On
1500.08	8	<b>Mode 3/A Code</b>	Integer 2	None	0 ≤ x ≤ 4,095 (Octal 0000 to 7777)
1500.09	9	<b>Mode 3/A Enable</b>	Unsigned 1	Enumerated	0 = Off 1 = On
1500.10	10	<b>Mode C Enable</b>	Unsigned 1	Enumerated	0 = Off 1 = On
1500.11	11	<b>Mode 4 Enable</b>	Unsigned 1	Enumerated	0 = Off 1 = On
5000.01	12	<b>Mode S Address</b>	Integer 4	None	0 < x ≤ 16,777,214 (Octal 00000001 to 77777776)
5000.02	13	<b>Mode S Enable</b>	Unsigned 1	Enumerated	0 = Off 1 = On
5000.03	14	<b>Mode S Aircraft ID</b>  See ICAO Annex 10 to the Convention on International Civil Aviation, Volume IV.	Character 9	None	No Restrictions
5000.04	15	<b>Mode S Maximum True Airspeed</b>  Limits are given in km/h.	Unsigned 1	Enumerated	0 = No Airspeed Available 1 = 0 to 140 2 = >140 to 280 3 = >280 to 560 4 = >560 to 1110 5 = >1110 to 2220 6 = >2220 7 = Not Assigned
1500.16	16	<b>Mode S Squitter Type</b>	Unsigned 1	Enumerated	0 = Disable 1 = Short 2 = Extended
1500.17	17	<b>Mode S Surveillance Response Type</b>	Unsigned 1	Enumerated	0 = Elementary 1 = Enhanced

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1500.18	18	<b>Mode 5 Enable</b>	Unsigned 1	Enumerated	0 = Off 1 = On
1500.19	19	<b>Mode 1 Code Extended</b>  Note: If both Unique ID#s 1500.04 and 1500.19 are enabled then they should be consistent.	Integer 2	None	0 ≤ x ≤ 4,095 (Octal 0000 to 7777)
1500.20	20	<b>Mode 5 Platform Identification Number</b>	Unsigned 2	None	x ≤ 16,383 (Octal 00000 to 37777)
1500.21	21	<b>Mode 5 National Origin</b>  See STANAG 4193	Unsigned 2	None	No Restrictions
1500.22	22	<b>Mode 5 Mission Code</b>  See STANAG 4193	Unsigned 1	None	No Restrictions
1500.23	23	<b>Mode 5 Squitter Type</b>	Unsigned 1	Enumerated	0 = Disable 1 = Short 2 = Extended
1500.24	24	<b>Mode 5 Reply Light Enable</b>	Unsigned 1	Enumerated	0 = Off 1 = On
1500.25	25	<b>Mode 5 Time of Day Source</b>	Unsigned 1	Enumerated	0 = Manual 1 = GPS
1500.26	26	<b>Mode 5 Time of Day</b>	Double	s	See Section 1.7.2
1500.15	27	<b>Operating Mode</b>	Unsigned 1	Enumerated	0 = Off 1 = Standby 2 = Normal 3 = Emergency

**Table 4 - 102: Message #1500: IFF/SSR Code Command****4.1.9.2 Message #1501: IFF/SSR Identification of Position Command**

This message shall be used to direct the transponder onboard the UA to transmit the UA's identification of position (I/P) [DLI 0323]. Setting Unique ID #1501.04 to "Ident" (1) shall initiate the I/P process, if supported [DLI 0526]. The duration of the I/P process is system dependent. Setting Unique ID #1501.04 to "Normal" (0) shall be used to terminate the I/P process, if supported. [DLI 0511].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1501.01	1	<b>Time Stamp</b>	Double	s	See Section 1.7.2
1501.02	2	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
1501.03	3	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5
1501.04	4	<b>Identification of Position (I/P)</b>	Unsigned 1	Enumerated	0 = Normal 1 = I/P Active

**Table 4 - 103: Message #1501: IFF/SSR Identification of Position Command****4.1.9.3 Message #1502: IFF Key Control Command**

This message shall be used to control the cryptographic key settings and commands for the transponder onboard the UA [DLI 0512].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1502.01	1	Time Stamp	Double	s	See Section 1.7.2
1502.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
1502.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
1502.04	4	Mode 4 A/B	Unsigned 1	Enumerated	0 = A 1 = B
1502.05	5	IFF Key Hold	Unsigned 1	Enumerated	0 = No Change 1 = Mode 4 Hold 3 = Mode 5 Hold 4 = Modes 4&5 Hold
1502.06	6	IFF Key Zeroize	Unsigned 1	Enumerated	0 = No Change 1 = Mode 4 Zeroize 3 = Mode 5 Zeroize 4 = Modes 4&5 Zeroize

**Table 4 - 104: Message #1502: IFF Key Control Command****4.1.9.4 Message #1503: IFF/SSR BIT Command**

This message shall be used to command initiation of the transponder built-in test (BIT) [DLI 0513].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1503.01	1	Time Stamp	Double	s	See Section 1.7.2
1503.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
1503.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
1503.04	4	IFF/SSR BIT Command	Unsigned 1	Enumerated	0 = No Change 1 = Initiate

**Table 4 - 105: Message #1503: IFF/SSR BIT Command****4.1.9.5 Message #1600: IFF/SSR Status Report**

1. This message shall be used to report the IFF/SSR status to the CUCS [DLI 0327].
2. Octal values shall be packed in the 6 or 12 least significant bits of the field (e.g., Octal 1234 would be stored as 0x029C, or 668 decimal) [DLI 0482].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1600.01	1	Time Stamp	Double	s	See Section 1.7.2
1600.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
1600.03	3	CUCS ID	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1600.04	4	<b>Mode 1 Code</b>  Note: If both Unique ID #'s 1600.04 and 1600.17 are enabled then they should be consistent.	Integer 1	None	0 ≤ x ≤ 3 (First Digit 0, 2nd Digit 0..3) 8 ≤ x ≤ 11 (First Digit 1, 2nd Digit 0..3) 16 ≤ x ≤ 19 (First Digit 2, 2nd Digit 0..3) 24 ≤ x ≤ 27 (First Digit 3, 2nd Digit 0..3) 32 ≤ x ≤ 35 (First Digit 4, 2nd Digit 0..3) 40 ≤ x ≤ 43 (First Digit 5, 2nd Digit 0..3) 48 ≤ x ≤ 51 (First Digit 6, 2nd Digit 0..3) 56 ≤ x ≤ 59 (First Digit 7, 2nd Digit 0..3)
1600.05	5	<b>Mode 1 Enabled</b>	Unsigned 1	Enumerated	0 = Off 1 = On
1600.18	6	<b>Mode 2 Code</b>	Integer 2	None	0 ≤ x ≤ 4,095 (Octal 0000 to 7777)
1600.06	7	<b>Mode 2 Enabled</b>	Unsigned 1	Enumerated	0 = Off 1 = On
1600.07	8	<b>Mode 3/A Code</b>	Integer 2	None	0 ≤ x ≤ 4,095 (Octal 0000 to 7777)
1600.08	9	<b>Mode 3/A Enabled</b>	Unsigned 1	Enumerated	0 = Off 1 = On
1600.09	10	<b>Mode C Enabled</b>	Unsigned 1	Enumerated	0 = Off 1 = On
1600.10	11	<b>Mode 4 Enabled</b>	Unsigned 1	Enumerated	0 = Off 1 = On
1600.11	12	<b>Mode 4 A/B</b>	Unsigned 1	Enumerated	0 = A 1 = B
1600.12	13	<b>Mode 4 Hold</b>	Unsigned 1	Enumerated	0 = Normal 1 = Hold 2 = Zeroized
6000.01	14	<b>Mode S Address</b>	Integer 4	None	0 < x ≤ 16,777,214 (Octal 00000001 to 77777776)
6000.02	15	<b>Mode S Enable</b>	Unsigned 1	Enumerated	0 = Off 1 = On
6000.03	16	<b>Mode S Aircraft ID</b>  See ICAO Annex 10 to the Convention on International Civil Aviation, Volume IV.	Character 9	None	No Restrictions
6000.04	17	<b>Mode S Maximum True Airspeed</b>  Limits are given in km/h.	Unsigned 1	Enumerated	0 = No Airspeed Available 1 = 0 to 140 2 = >140 to 280 3 = >280 to 560 4 = >560 to 1110 5 = >1110 to 2220 6 = >2220 7 = Not Assigned

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1600.14	18	<b>Mode S Squitter Type</b>	Unsigned 1	Enumerated	0 = Disable 1 = Short 2 = Extended
1600.15	19	<b>Mode S Surveillance Response Type</b>	Unsigned 1	Enumerated	0 = Elementary 1 = Enhanced
1600.16	20	<b>Mode 5 Enabled</b>	Unsigned 1	Enumerated	0 = Off 1 = On
1600.17	21	<b>Mode 1 Code Extended</b>  Note: If both Unique ID #'s 1600.04 and 1600.17 are enabled then they should be consistent.	Integer 2	None	0 ≤ x ≤ 4,095 (Octal 0000 to 7777)
1600.19	22	<b>Mode 5 Platform Identification Number</b>	Unsigned 2	None	x ≤ 16,383 (Octal 00000 to 37777)
1600.20	23	<b>Mode 5 National Origin</b>  See STANAG 4193	Unsigned 2	None	No Restrictions
1600.21	24	<b>Mode 5 Mission Code</b>  See STANAG 4193	Unsigned 1	None	No Restrictions
1600.22	25	<b>Mode 5 Squitter Type</b>	Unsigned 1	Enumerated	0 = Disable 1 = Short 2 = Extended
1600.23	26	<b>Mode 5 Reply Light Enabled</b>	Unsigned 1	Enumerated	0 = Off 1 = On
1600.24	27	<b>Mode 5 Reply Light</b>	Unsigned 1	Enumerated	0 = Off 1 = On
1600.25	28	<b>Mode 5 Time of Day Source</b>	Unsigned 1	Enumerated	0 = Manual 1 = GPS
1600.26	29	<b>Mode 5 Time of Day</b>	Double	s	See Section 1.7.2
1600.27	30	<b>Mode 5 Hold</b>	Unsigned 1	Enumerated	0 = Normal 1 = Hold 2 = Zeroized
1600.28	31	<b>IFF/SSR BIT Status</b>	Unsigned 1	Enumerated	0 = Not Run 1 = Running 2 = Fail 3 = Pass
1600.13	32	<b>Operating Mode</b>	Unsigned 1	Enumerated	0 = Off 1 = Standby 2 = Normal 3 = Emergency
6000.05	33	<b>Identification Of Position (I/P)</b>  Valid for Modes 1, 2, 3/A and S.	Unsigned 1	Enumerated	0 = I/P Inactive 1 = I/P Active

**Table 4 - 106: Message #1600: IFF/SSR Status Report****4.1.10 Weapon Command and Status Messages****4.1.10.1 Message #1800: Store Specific Information Request**

This message shall be used for requests that require store addressing [DLI 0534]. Generally, Message #1403 requests status messages of various types (e.g., SMS Status, Inventory Response Status, etc.). However, for store specific status requests, Message #1403 lacks sufficient addressing capability to handle requests that require store addressing. Therefore, Message #1800 has been designed to fill that gap. Several messages, such as Messages #1902 and #1904, are not queried via this method because they are part of a multi-message sequence although their “parent” messages (#1901 and #1903) can be queried.

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
<b>1800.01</b>	<b>1</b>	<b>Time Stamp</b>	Double	s	Refer to Section 1.7.2
<b>1800.02</b>	<b>2</b>	<b>Vehicle ID</b>	Integer 4	None	Refer to Section 1.7.5
<b>1800.03</b>	<b>3</b>	<b>CUCS ID</b>	Integer 4	None	Refer to Section 1.7.5
<b>1800.04</b>	<b>4</b>	<b>VSM ID</b>	Integer 4	None	See Section 1.7.5
<b>1800.05</b>	<b>5</b>	<b>Data Link ID</b>  Identifies the specific data link to process this message.	Integer 4	None	See Section 1.7.5
<b>1800.06</b>	<b>6</b>	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1800.07	7	Hardpoint ID	Unsigned 4	Bitmapped	0x00000001 = Hdp #1 0x00000002 = Hdp #2 0x00000004 = Hdp #3 0x00000008 = Hdp #4 0x00000010 = Hdp #5 0x00000020 = Hdp #6 0x00000040 = Hdp #7 0x00000080 = Hdp #8 0x00000100 = Hdp #9 0x00000200 = Hdp #10 0x00000400 = Hdp #11 0x00000800 = Hdp #12 0x00001000 = Hdp #13 0x00002000 = Hdp #14 0x00004000 = Hdp #15 0x00008000 = Hdp #16 0x00010000 = Hdp #17 0x00020000 = Hdp #18 0x00040000 = Hdp #19 0x00080000 = Hdp #20 0x00100000 = Hdp #21 0x00200000 = Hdp #22 0x00400000 = Hdp #23 0x00800000 = Hdp #24 0x01000000 = Hdp #25 0x02000000 = Hdp #26 0x04000000 = Hdp #27 0x08000000 = Hdp #28 0x10000000 = Hdp #29 0x20000000 = Hdp #30 0x40000000 = Hdp #31 0x80000000 = Hdp #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1800.08	8	Carriage ID	Unsigned 4	Bitmapped	0x00000001 = Crg #1 0x00000002 = Crg #2 0x00000004 = Crg #3 0x00000008 = Crg #4 0x00000010 = Crg #5 0x00000020 = Crg #6 0x00000040 = Crg #7 0x00000080 = Crg #8 0x00000100 = Crg #9 0x00000200 = Crg #10 0x00000400 = Crg #11 0x00000800 = Crg #12 0x00001000 = Crg #13 0x00002000 = Crg #14 0x00004000 = Crg #15 0x00008000 = Crg #16 0x00010000 = Crg #17 0x00020000 = Crg #18 0x00040000 = Crg #19 0x00080000 = Crg #20 0x00100000 = Crg #21 0x00200000 = Crg #22 0x00400000 = Crg #23 0x00800000 = Crg #24 0x01000000 = Crg #25 0x02000000 = Crg #26 0x04000000 = Crg #27 0x08000000 = Crg #28 0x10000000 = Crg #29 0x20000000 = Crg #30 0x40000000 = Crg #31 0x80000000 = Crg #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1800.09	9	<b>Store ID</b>	Unsigned 4	Bitmapped	0x00000001 = Str #1 0x00000002 = Str #2 0x00000004 = Str #3 0x00000008 = Str #4 0x00000010 = Str #5 0x00000020 = Str #6 0x00000040 = Str #7 0x00000080 = Str #8 0x00000100 = Str #9 0x00000200 = Str #10 0x00000400 = Str #11 0x00000800 = Str #12 0x00001000 = Str #13 0x00002000 = Str #14 0x00004000 = Str #15 0x00008000 = Str #16 0x00010000 = Str #17 0x00020000 = Str #18 0x00040000 = Str #19 0x00080000 = Str #20 0x00100000 = Str #21 0x00200000 = Str #22 0x00400000 = Str #23 0x00800000 = Str #24 0x01000000 = Str #25 0x02000000 = Str #26 0x04000000 = Str #27 0x08000000 = Str #28 0x10000000 = Str #29 0x20000000 = Str #30 0x40000000 = Str #31 0x80000000 = Str #32
1800.10	10	<b>Message Type</b>  Any weapon-specific message that addresses a specific store.	Unsigned 4	Enumerated	1901 = Message #1901 1903 = Message #1903 1904 = Message #1904 1907 = Message #1907 1908 = Message #1908 1911 = Message #1911 1912 = Message #1912 1913 = Message #1913 1914 = Message #1914 1915 = Message #1915 1916 = Message #1916 1917 = Message #1917 1919 = Message #1919 1920 = Message #1920 1922 = Message #1922
1800.11	11	<b>Request ID</b>  A mission Unique ID to distinguish one request from another.	Unsigned 1	None	$1 \leq x$

**Table 4 - 107: Message #1800: Store Specific Information Request****4.1.10.2 Message #1801: Transfer Weapons Configuration Data File**

This message shall be used to inform the UA of the location of the configuration data [DLI 0535].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1801.01	1	Time Stamp	Double	s	Refer to Section 1.7.2
1801.02	2	Vehicle ID	Integer 4	None	Refer to Section 1.7.5
1801.03	3	CUCS ID	Integer 4	None	Refer to Section 1.7.5
1801.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
1801.05	5	Uniform Resource Identifier (URI)	Character 256	None	No Restrictions
1801.06	6	Load Out ID	Character 128	None	No Restrictions

**Table 4 - 108: Message #1801: Transfer Weapons Configuration Data File****4.1.10.3 Message #1802: Build Store Inventory**

This message shall command the UA to identify the installed stores and validate them against the configuration data [DLI 0536]. Upon completion of the identification and validation process, the UA responds with a SMS Status Message (#1900) to communicate the success or failure of this process.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1802.01	1	Time Stamp	Double	s	Refer to Section 1.7.2
1802.02	2	Vehicle ID	Integer 4	None	Refer to Section 1.7.5
1802.03	3	CUCS ID	Integer 4	None	Refer to Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1802.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

**Table 4 - 109: Message #1802: Build Store Inventory**

#### 4.1.10.4 Message #1803: Primary Store Control

This message shall perform general store control not covered by functionally specific store control messages such as Laser Control, Seeker or Sensor Control, Fuze Control, etc. [DLI 0537]. If the triplet (Hardpoint ID, Carriage ID, and Store ID) is set to no selection (0, 0, 0), then the Weapon Package ID and Weapon Package Firing Order is used to select the store.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1803.01	1	Time Stamp	Double	s	Refer to Section 1.7.2
1803.02	2	Vehicle ID	Integer 4	None	Refer to Section 1.7.5
1803.03	3	CUCS ID	Integer 4	None	Refer to Section 1.7.5
1803.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1803.05	5	Hardpoint ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Hdp #1 0x00000002 = Hdp #2 0x00000004 = Hdp #3 0x00000008 = Hdp #4 0x00000010 = Hdp #5 0x00000020 = Hdp #6 0x00000040 = Hdp #7 0x00000080 = Hdp #8 0x00000100 = Hdp #9 0x00000200 = Hdp #10 0x00000400 = Hdp #11 0x00000800 = Hdp #12 0x00001000 = Hdp #13 0x00002000 = Hdp #14 0x00004000 = Hdp #15 0x00008000 = Hdp #16 0x00010000 = Hdp #17 0x00020000 = Hdp #18 0x00040000 = Hdp #19 0x00080000 = Hdp #20 0x00100000 = Hdp #21 0x00200000 = Hdp #22 0x00400000 = Hdp #23 0x00800000 = Hdp #24 0x01000000 = Hdp #25 0x02000000 = Hdp #26 0x04000000 = Hdp #27 0x08000000 = Hdp #28 0x10000000 = Hdp #29 0x20000000 = Hdp #30 0x40000000 = Hdp #31 0x80000000 = Hdp #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1803.06	6	Carriage ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Crg #1 0x00000002 = Crg #2 0x00000004 = Crg #3 0x00000008 = Crg #4 0x00000010 = Crg #5 0x00000020 = Crg #6 0x00000040 = Crg #7 0x00000080 = Crg #8 0x00000100 = Crg #9 0x00000200 = Crg #10 0x00000400 = Crg #11 0x00000800 = Crg #12 0x00001000 = Crg #13 0x00002000 = Crg #14 0x00004000 = Crg #15 0x00008000 = Crg #16 0x00010000 = Crg #17 0x00020000 = Crg #18 0x00040000 = Crg #19 0x00080000 = Crg #20 0x00100000 = Crg #21 0x00200000 = Crg #22 0x00400000 = Crg #23 0x00800000 = Crg #24 0x01000000 = Crg #25 0x02000000 = Crg #26 0x04000000 = Crg #27 0x08000000 = Crg #28 0x10000000 = Crg #29 0x20000000 = Crg #30 0x40000000 = Crg #31 0x80000000 = Crg #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1803.07	7	<b>Store ID</b>	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Str #1 0x00000002 = Str #2 0x00000004 = Str #3 0x00000008 = Str #4 0x00000010 = Str #5 0x00000020 = Str #6 0x00000040 = Str #7 0x00000080 = Str #8 0x00000100 = Str #9 0x00000200 = Str #10 0x00000400 = Str #11 0x00000800 = Str #12 0x00001000 = Str #13 0x00002000 = Str #14 0x00004000 = Str #15 0x00008000 = Str #16 0x00010000 = Str #17 0x00020000 = Str #18 0x00040000 = Str #19 0x00080000 = Str #20 0x00100000 = Str #21 0x00200000 = Str #22 0x00400000 = Str #23 0x00800000 = Str #24 0x01000000 = Str #25 0x02000000 = Str #26 0x04000000 = Str #27 0x08000000 = Str #28 0x10000000 = Str #29 0x20000000 = Str #30 0x40000000 = Str #31 0x80000000 = Str #32
1803.08	8	<b>Weapon Package ID</b>  A value of "255" selects the default weapon package.	Unsigned 1	None	1 ≤ x
1803.09	9	<b>Weapon Package Firing Order</b>	Unsigned 1	None	1 ≤ x
1803.10	10	<b>Power State</b>	Unsigned 1	Enumerated	0 = Off 1 = On 2 = No Change
1803.11	11	<b>Activate IBIT</b>  Command the carriage system or mission store to perform an initiated built in test.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1803.12	12	<b>Initiate Recovery Sequence</b>  Start system specific recovery sequence.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1803.13	13	<b>Erase Command/Authority</b> Erase sensitive data.	Unsigned 1	Enumerated	0 = Do Not Erase 1 = Erase Mission Data 2 = Zeroize GPS Crypto Data 3 = Erase Store OFP 4 = Erase All GeoZone Data 5 - 255 = Weapon Specific
1803.14	14	<b>Inhibit GPS</b> Provides the platform with the capability to command the mission store to inhibit use of GPS inputs in the store navigation solution.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1803.15	15	<b>Power Management</b> Commands the mission store into a low power consumption mode.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1803.16	16	<b>Store Selected</b>	Unsigned 1	Enumerated	0 = Deselect Store 1 = Select Store 2 = No Change

**Table 4 - 110: Message #1803: Primary Store Control****4.1.10.5 Message #1804: Abort Release/Launch**

This message shall command the UA to abort the release or launch of the specified store or set of stores [DLI 0538].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1804.01	1	<b>Time Stamp</b>	Double	s	Refer to Section 1.7.2
1804.02	2	<b>Vehicle ID</b>	Integer 4	None	Refer to Section 1.7.5
1804.03	3	<b>CUCS ID</b>	Integer 4	None	Refer to Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1804.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1804.05	5	Hardpoint ID	Unsigned 4	Bitmapped	0x00000001 = Hdp #1 0x00000002 = Hdp #2 0x00000004 = Hdp #3 0x00000008 = Hdp #4 0x00000010 = Hdp #5 0x00000020 = Hdp #6 0x00000040 = Hdp #7 0x00000080 = Hdp #8 0x00000100 = Hdp #9 0x00000200 = Hdp #10 0x00000400 = Hdp #11 0x00000800 = Hdp #12 0x00001000 = Hdp #13 0x00002000 = Hdp #14 0x00004000 = Hdp #15 0x00008000 = Hdp #16 0x00010000 = Hdp #17 0x00020000 = Hdp #18 0x00040000 = Hdp #19 0x00080000 = Hdp #20 0x00100000 = Hdp #21 0x00200000 = Hdp #22 0x00400000 = Hdp #23 0x00800000 = Hdp #24 0x01000000 = Hdp #25 0x02000000 = Hdp #26 0x04000000 = Hdp #27 0x08000000 = Hdp #28 0x10000000 = Hdp #29 0x20000000 = Hdp #30 0x40000000 = Hdp #31 0x80000000 = Hdp #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1804.06	6	Carriage ID	Unsigned 4	Bitmapped	0x00000001 = Crg #1 0x00000002 = Crg #2 0x00000004 = Crg #3 0x00000008 = Crg #4 0x00000010 = Crg #5 0x00000020 = Crg #6 0x00000040 = Crg #7 0x00000080 = Crg #8 0x00000100 = Crg #9 0x00000200 = Crg #10 0x00000400 = Crg #11 0x00000800 = Crg #12 0x00001000 = Crg #13 0x00002000 = Crg #14 0x00004000 = Crg #15 0x00008000 = Crg #16 0x00010000 = Crg #17 0x00020000 = Crg #18 0x00040000 = Crg #19 0x00080000 = Crg #20 0x00100000 = Crg #21 0x00200000 = Crg #22 0x00400000 = Crg #23 0x00800000 = Crg #24 0x01000000 = Crg #25 0x02000000 = Crg #26 0x04000000 = Crg #27 0x08000000 = Crg #28 0x10000000 = Crg #29 0x20000000 = Crg #30 0x40000000 = Crg #31 0x80000000 = Crg #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1804.07	7	Store ID	Unsigned 4	Bitmapped	0x00000001 = Str #1 0x00000002 = Str #2 0x00000004 = Str #3 0x00000008 = Str #4 0x00000010 = Str #5 0x00000020 = Str #6 0x00000040 = Str #7 0x00000080 = Str #8 0x00000100 = Str #9 0x00000200 = Str #10 0x00000400 = Str #11 0x00000800 = Str #12 0x00001000 = Str #13 0x00002000 = Str #14 0x00004000 = Str #15 0x00008000 = Str #16 0x00010000 = Str #17 0x00020000 = Str #18 0x00040000 = Str #19 0x00080000 = Str #20 0x00100000 = Str #21 0x00200000 = Str #22 0x00400000 = Str #23 0x00800000 = Str #24 0x01000000 = Str #25 0x02000000 = Str #26 0x04000000 = Str #27 0x08000000 = Str #28 0x10000000 = Str #29 0x20000000 = Str #30 0x40000000 = Str #31 0x80000000 = Str #32
1804.08	8	Release/Launch Abort	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled 2 - 15 = Reserved 16 - 255 = Weapon Specific

**Table 4 - 111: Message #1804: Abort Release/Launch****4.1.10.6 Message #1805: Prepare Store**

This message shall command the UA to prepare a particular store for an engagement [DLI 0539]. After the weapon power on/initialization sequence is complete, the UA responds with a Primary Store Status Message (#1903).

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1805.01	1	Time Stamp	Double	s	Refer to Section 1.7.2
1805.02	2	Vehicle ID	Integer 4	None	Refer to Section 1.7.5
1805.03	3	CUCS ID	Integer 4	None	Refer to Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1805.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1805.05	5	Hardpoint ID	Unsigned 4	Bitmapped	0x00000001 = Hdp #1 0x00000002 = Hdp #2 0x00000004 = Hdp #3 0x00000008 = Hdp #4 0x00000010 = Hdp #5 0x00000020 = Hdp #6 0x00000040 = Hdp #7 0x00000080 = Hdp #8 0x00000100 = Hdp #9 0x00000200 = Hdp #10 0x00000400 = Hdp #11 0x00000800 = Hdp #12 0x00001000 = Hdp #13 0x00002000 = Hdp #14 0x00004000 = Hdp #15 0x00008000 = Hdp #16 0x00010000 = Hdp #17 0x00020000 = Hdp #18 0x00040000 = Hdp #19 0x00080000 = Hdp #20 0x00100000 = Hdp #21 0x00200000 = Hdp #22 0x00400000 = Hdp #23 0x00800000 = Hdp #24 0x01000000 = Hdp #25 0x02000000 = Hdp #26 0x04000000 = Hdp #27 0x08000000 = Hdp #28 0x10000000 = Hdp #29 0x20000000 = Hdp #30 0x40000000 = Hdp #31 0x80000000 = Hdp #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1805.06	6	Carriage ID	Unsigned 4	Bitmapped	0x00000001 = Crg #1 0x00000002 = Crg #2 0x00000004 = Crg #3 0x00000008 = Crg #4 0x00000010 = Crg #5 0x00000020 = Crg #6 0x00000040 = Crg #7 0x00000080 = Crg #8 0x00000100 = Crg #9 0x00000200 = Crg #10 0x00000400 = Crg #11 0x00000800 = Crg #12 0x00001000 = Crg #13 0x00002000 = Crg #14 0x00004000 = Crg #15 0x00008000 = Crg #16 0x00010000 = Crg #17 0x00020000 = Crg #18 0x00040000 = Crg #19 0x00080000 = Crg #20 0x00100000 = Crg #21 0x00200000 = Crg #22 0x00400000 = Crg #23 0x00800000 = Crg #24 0x01000000 = Crg #25 0x02000000 = Crg #26 0x04000000 = Crg #27 0x08000000 = Crg #28 0x10000000 = Crg #29 0x20000000 = Crg #30 0x40000000 = Crg #31 0x80000000 = Crg #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1805.07	7	<b>Store ID</b>  A unique ID to distinguish one weapon package from another.  A value of "255" selects the default weapon package.	Unsigned 4	Bitmapped	0x00000001 = Str #1 0x00000002 = Str #2 0x00000004 = Str #3 0x00000008 = Str #4 0x00000010 = Str #5 0x00000020 = Str #6 0x00000040 = Str #7 0x00000080 = Str #8 0x00000100 = Str #9 0x00000200 = Str #10 0x00000400 = Str #11 0x00000800 = Str #12 0x00001000 = Str #13 0x00002000 = Str #14 0x00004000 = Str #15 0x00008000 = Str #16 0x00010000 = Str #17 0x00020000 = Str #18 0x00040000 = Str #19 0x00080000 = Str #20 0x00100000 = Str #21 0x00200000 = Str #22 0x00400000 = Str #23 0x00800000 = Str #24 0x01000000 = Str #25 0x02000000 = Str #26 0x04000000 = Str #27 0x08000000 = Str #28 0x10000000 = Str #29 0x20000000 = Str #30 0x40000000 = Str #31 0x80000000 = Str #32
1805.08	8	<b>Weapon Package ID</b>  The order in which the weapons in the weapon package will be fired by sequential "trigger pulls".	Unsigned 1	None	1 ≤ x
1805.09	9	<b>Weapon Package Firing Order</b>	Unsigned 1	None	1 ≤ x

**Table 4 - 112: Message #1805: Prepare Store**

#### 4.1.10.7 Message #1806: Master Arm Control

This message shall command the UA to enable or disable master arm state within the UA Stores Management System (SMS) [DLI 0540]. The UA SMS responds with an SMS Status Message (#1900) reporting on the success or failure of the operation. Master Arm Control is the initiating message that starts the Engage Target Sequence. Master Arm Command is a keyed value set by the Publish Key Message (#1816). If the UA leaves the master arm state by any safety condition, it cannot accept the same Request ID to enable the master arm state, and a new Request ID must be sent to enable the master arm state within the UA SMS.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1806.01	1	Time Stamp	Double	s	Refer to Section 1.7.2
1806.02	2	Vehicle ID	Integer 4	None	Refer to Section 1.7.5
1806.03	3	CUCS ID	Integer 4	None	Refer to Section 1.7.5
1806.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
1806.05	5	Master Arm Request ID  A mission Unique ID to distinguish one command from another.	Unsigned 1	None	$1 \leq x$

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1806.06	6	<b>Master Arm Command</b>  Key Value = Enable 0xffffffff = Disable All Others = Disable  Key Value is mission dependent and transmitted via Message #1816 Publish Key.	Unsigned 4	None	No Restrictions

**Table 4 - 113: Message #1806: Master Arm Control****4.1.10.8 Message #1807: Select Weapon Package**

This message shall command the UA to select a particular weapon package defined in the configuration data [DLI 0541]. This typically happens as part of a target engagement sequence. The UA responds with a Weapon Package Status Message (#1906).

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1807.01	1	Time Stamp	Double	s	Refer to Section 1.7.2
1807.02	2	Vehicle ID	Integer 4	None	Refer to Section 1.7.5
1807.03	3	CUCS ID	Integer 4	None	Refer to Section 1.7.5
1807.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1807.05	5	<b>Weapon Package Request ID</b>  A mission Unique ID to distinguish one request from another.	Unsigned 1	None	$1 \leq x$
1807.06	6	<b>Weapon Package ID</b>  The unique identifier for this particular weapon package.  A value of "255" selects the default weapon package.	Unsigned 1	None	$1 \leq x$

**Table 4 - 114: Message #1807: Select Weapon Package****4.1.10.9 Message #1808: Weapon Fire Control**

1. This message shall command the UA to fire the currently selected weapon(s) [DLI 0542]. The CUCS can use the Weapon Package concept or it can manually select individual stores via Prepare Store message (#1805). The receipt of this message causes the UA to request the release for the selected weapons while the Master Arm is engaged. After each store is released (or not in the case of a hung store or other release related failure), the UA responds with a Primary Store Status Message (#1903) indicating the release status. Fire Command is a unique four-byte unsigned value. Thus, Fire Command is TRUE if the value received is equal to the specified value and FALSE otherwise.
2. Fire request sequencing consists of x keyed messages to optionally be received within a specified time period. The key value is generated for each mission and sent via the Publish Key Message (#1816). This message transmits the total number of messages to be received, the bounding time period in seconds (if 1808.10 = zero then no period is specified), and the index of the current message where index is between 1 and x.
3. The Weapon Fire Control message allows for two mutually exclusive methods for specifying the store to be released. The first method is to specify the store address (Hardpoint ID, Carriage ID, Store ID) which will cause the UA to attempt to release the store corresponding to the specified address. If the address contains all zeros, then firing order (See Messages 1803 and 1903) determines which store is released. Each successive set of Weapon Fire Control message(s) will cause the UA to release the next store in the firing order sequence.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1808.01	1	<b>Time Stamp</b>	Double	s	Refer to Section 1.7.2
1808.02	2	<b>Vehicle ID</b>	Integer 4	None	Refer to Section 1.7.5
1808.03	3	<b>CUCS ID</b>	Integer 4	None	Refer to Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1808.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1808.05	5	Hardpoint ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Hdp #1 0x00000002 = Hdp #2 0x00000004 = Hdp #3 0x00000008 = Hdp #4 0x00000010 = Hdp #5 0x00000020 = Hdp #6 0x00000040 = Hdp #7 0x00000080 = Hdp #8 0x00000100 = Hdp #9 0x00000200 = Hdp #10 0x00000400 = Hdp #11 0x00000800 = Hdp #12 0x00001000 = Hdp #13 0x00002000 = Hdp #14 0x00004000 = Hdp #15 0x00008000 = Hdp #16 0x00010000 = Hdp #17 0x00020000 = Hdp #18 0x00040000 = Hdp #19 0x00080000 = Hdp #20 0x00100000 = Hdp #21 0x00200000 = Hdp #22 0x00400000 = Hdp #23 0x00800000 = Hdp #24 0x01000000 = Hdp #25 0x02000000 = Hdp #26 0x04000000 = Hdp #27 0x08000000 = Hdp #28 0x10000000 = Hdp #29 0x20000000 = Hdp #30 0x40000000 = Hdp #31 0x80000000 = Hdp #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1808.06	6	Carriage ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Crg #1 0x00000002 = Crg #2 0x00000004 = Crg #3 0x00000008 = Crg #4 0x00000010 = Crg #5 0x00000020 = Crg #6 0x00000040 = Crg #7 0x00000080 = Crg #8 0x00000100 = Crg #9 0x00000200 = Crg #10 0x00000400 = Crg #11 0x00000800 = Crg #12 0x00001000 = Crg #13 0x00002000 = Crg #14 0x00004000 = Crg #15 0x00008000 = Crg #16 0x00010000 = Crg #17 0x00020000 = Crg #18 0x00040000 = Crg #19 0x00080000 = Crg #20 0x00100000 = Crg #21 0x00200000 = Crg #22 0x00400000 = Crg #23 0x00800000 = Crg #24 0x01000000 = Crg #25 0x02000000 = Crg #26 0x04000000 = Crg #27 0x08000000 = Crg #28 0x10000000 = Crg #29 0x20000000 = Crg #30 0x40000000 = Crg #31 0x80000000 = Crg #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1808.07	7	<b>Store ID</b>	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Str #1 0x00000002 = Str #2 0x00000004 = Str #3 0x00000008 = Str #4 0x00000010 = Str #5 0x00000020 = Str #6 0x00000040 = Str #7 0x00000080 = Str #8 0x00000100 = Str #9 0x00000200 = Str #10 0x00000400 = Str #11 0x00000800 = Str #12 0x00001000 = Str #13 0x00002000 = Str #14 0x00004000 = Str #15 0x00008000 = Str #16 0x00010000 = Str #17 0x00020000 = Str #18 0x00040000 = Str #19 0x00080000 = Str #20 0x00100000 = Str #21 0x00200000 = Str #22 0x00400000 = Str #23 0x00800000 = Str #24 0x01000000 = Str #25 0x02000000 = Str #26 0x04000000 = Str #27 0x08000000 = Str #28 0x10000000 = Str #29 0x20000000 = Str #30 0x40000000 = Str #31 0x80000000 = Str #32
1808.08	8	<b>Fire Request ID</b>  A mission Unique ID to distinguish one fire command from another.	Unsigned 1	None	$1 \leq x$
1808.09	9	<b>Fire Request Sequence ID</b>  The ID of the current request out of the x requests for this sequence.	Unsigned 1	None	$1 \leq x$
1808.10	10	<b>Fire Command</b>  Key Value = Enable All Others = Disable  Key Value is mission dependent and transmitted via Message #1816 Publish Key.	Unsigned 4	None	No Restrictions

**Table 4 - 115: Message #1808: Weapon Fire Control**

#### 4.1.10.10 Message #1809: Prepare For Recovery

This message shall command the UA to prepare for recovery [DLI 0543]. This will give the UA a cue for securing any classified information and safing the entire system for landing. This message is intended to cover emergency “recovery” as well as nominal missions where the UA returns to an authorized base.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1809.01	1	Time Stamp	Double	s	Refer to Section 1.7.2
1809.02	2	Vehicle ID	Integer 4	None	Refer to Section 1.7.5
1809.03	3	CUCS ID	Integer 4	None	Refer to Section 1.7.5
1809.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
1809.05	5	Action Upon Recovery	Unsigned 1	Enumerated	0 = N/A 1 = Erase Critical Data 2 = Erase Store 3 - 255 = Platform/Store Specific

Table 4 - 116: Message #1809: Prepare For Recovery

#### 4.1.10.11 Message #1810: Fuze Control

This message shall command the fuze function for the selected weapon [DLI 0544]. If the triplet (Hardpoint ID, Carriage ID, and Store ID) is set to no selection (0, 0, 0), then the Weapon Package ID and Weapon Package Firing Order are used to select the store.

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1810.01	1	Time Stamp	Double	s	Refer to Section 1.7.2
1810.02	2	Vehicle ID	Integer 4	None	Refer to Section 1.7.5
1810.03	3	CUCS ID	Integer 4	None	Refer to Section 1.7.5
1810.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1810.05	5	Hardpoint ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Hdp #1 0x00000002 = Hdp #2 0x00000004 = Hdp #3 0x00000008 = Hdp #4 0x00000010 = Hdp #5 0x00000020 = Hdp #6 0x00000040 = Hdp #7 0x00000080 = Hdp #8 0x00000100 = Hdp #9 0x00000200 = Hdp #10 0x00000400 = Hdp #11 0x00000800 = Hdp #12 0x00001000 = Hdp #13 0x00002000 = Hdp #14 0x00004000 = Hdp #15 0x00008000 = Hdp #16 0x00010000 = Hdp #17 0x00020000 = Hdp #18 0x00040000 = Hdp #19 0x00080000 = Hdp #20 0x00100000 = Hdp #21 0x00200000 = Hdp #22 0x00400000 = Hdp #23 0x00800000 = Hdp #24 0x01000000 = Hdp #25 0x02000000 = Hdp #26 0x04000000 = Hdp #27 0x08000000 = Hdp #28 0x10000000 = Hdp #29 0x20000000 = Hdp #30 0x40000000 = Hdp #31 0x80000000 = Hdp #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1810.06	6	Carriage ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Crg #1 0x00000002 = Crg #2 0x00000004 = Crg #3 0x00000008 = Crg #4 0x00000010 = Crg #5 0x00000020 = Crg #6 0x00000040 = Crg #7 0x00000080 = Crg #8 0x00000100 = Crg #9 0x00000200 = Crg #10 0x00000400 = Crg #11 0x00000800 = Crg #12 0x00001000 = Crg #13 0x00002000 = Crg #14 0x00004000 = Crg #15 0x00008000 = Crg #16 0x00010000 = Crg #17 0x00020000 = Crg #18 0x00040000 = Crg #19 0x00080000 = Crg #20 0x00100000 = Crg #21 0x00200000 = Crg #22 0x00400000 = Crg #23 0x00800000 = Crg #24 0x01000000 = Crg #25 0x02000000 = Crg #26 0x04000000 = Crg #27 0x08000000 = Crg #28 0x10000000 = Crg #29 0x20000000 = Crg #30 0x40000000 = Crg #31 0x80000000 = Crg #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1810.07	7	<b>Store ID</b>	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Str #1 0x00000002 = Str #2 0x00000004 = Str #3 0x00000008 = Str #4 0x00000010 = Str #5 0x00000020 = Str #6 0x00000040 = Str #7 0x00000080 = Str #8 0x00000100 = Str #9 0x00000200 = Str #10 0x00000400 = Str #11 0x00000800 = Str #12 0x00001000 = Str #13 0x00002000 = Str #14 0x00004000 = Str #15 0x00008000 = Str #16 0x00010000 = Str #17 0x00020000 = Str #18 0x00040000 = Str #19 0x00080000 = Str #20 0x00100000 = Str #21 0x00200000 = Str #22 0x00400000 = Str #23 0x00800000 = Str #24 0x01000000 = Str #25 0x02000000 = Str #26 0x04000000 = Str #27 0x08000000 = Str #28 0x10000000 = Str #29 0x20000000 = Str #30 0x40000000 = Str #31 0x80000000 = Str #32
1810.08	8	<b>Weapon Package ID</b> A Unique ID to distinguish one weapon package from another. A value of "255" selects the default weapon package.	Unsigned 1	None	$1 \leq x$
1810.09	9	<b>Weapon Package Firing Order</b>	Unsigned 1	None	$1 \leq x$

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1810.10	10	<b>Fuze Mode</b>  Time delay for fuze functioning after release.	Unsigned 2	Bitmapped	0x0000 = No Selection 0x0001 = Impact 0x0002 = Time After Release 0x0004 = Time After Impact 0x0008 = Altitude 0x0010 = Depth 0x0020 = Proximity 0x0040 = Position of Target 0x0080 = Interference 0x0100 = Void 0x0200 = Layer 0x0400 = Low Voltage 0x0800 = Long Delay 0x1000 = Height 0x2000 = End of Life 0x4000 = Arm Delay Enable 0x8000 = Status Signal Enable
1810.11	11	<b>Fuze Delay From Release</b>  Time delay for fuze functioning after release.	Float	μs	x ≤ 2,361,099,999,999,999,900 ,000.0
1810.12	12	<b>Fuze Delay From Impact</b>  Time delay for fuze functioning after impact.	Float	μs	x ≤ 2,361,099,999,999,999,900 ,000.0
1810.13	13	<b>Distance</b>  Distance from the target for fuze functioning.	Integer 2	m	-32,767 ≤ x
1810.14	14	<b>Void Layer Number</b>  Void/layer number at which the fuze is to function.	Unsigned 1	None	x ≤ 100
1810.15	15	<b>Fuze Function Time From Event</b>  Time delay from specific event for fuze function or retard mechanism function.	Float	μs	x ≤ 2,361,099,999,999,999,900 ,000.0
1810.16	16	<b>Impact Velocity</b>  Defines the minimum velocity the fusing mechanism is expected to see at target impact in meters/second.	Float	m/s	x ≤ 8,192
1810.17	17	<b>High Drag Arm Time</b>	Float	μs	x ≤ 2,361,099,999,999,999,900 ,000.0
1810.18	18	<b>Fuze Initiation</b>  Indicates the fuze initiation method to be used by the mission store.	Unsigned 1	Enumerated	0 = Default 1 = External Fuze Sensor 2 = Internal Fuze Sensor 3 = Reserved for Growth

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1810.19	19	<b>Target Hardness</b> Commands the mission store to use fuze settings appropriate for the hardness of the target.	Unsigned 1	Enumerated	0 = Hardness Level 1 1 = Hardness Level 2 2 = Hardness Level 3 3 = Hardness Level 4
1810.20	20	<b>Store Retard Mechanism</b> Commands the mission store to enable its retard (i.e., high drag) mechanism.	Unsigned 1	Enumerated	0 = Separate in Low Drag Configuration 1 = Separate in High Drag Configuration
1810.21	21	<b>Enable Post Release Fuze Control</b> Commands the mission store to accept post release commands from authorized sources.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1810.22	22	<b>Fuze Time 1</b> Defines the start time after impact for the fuze to begin post impact target surveillance functions.	Float	μs	x ≤ 2,361,099,999,999,999,900 ,000.0
1810.23	23	<b>Fuze Time 2</b> Defines the stop time after impact for the fuze to end post impact target surveillance functions.	Float	μs	x ≤ 2,361,099,999,999,999,900 ,000.0
1810.24	24	<b>Enable Post Impact Fuze Surveillance</b> Commands the mission store to set its fuze to begin post impact fuze target surveillance functions Fuze Time 1 and end post impact fuze target surveillance functions at Fuze Time 2.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1810.25	25	<b>Prox RF After Launch</b> Enable Proximity RF Broadcast (time after launch).	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1810.26	26	<b>Prox RF Before Impact</b> Enable Proximity RF Broadcast (time before impact).	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1810.27	27	<b>Tether Length</b> Defines the length of tether that the fuze is to deploy to enable post impact fuze status transmissions. If the mission store does not have a tether capability, but can broadcast a status message, it ignores the data in this word.	Float	m	0 ≤ x ≤ 511.99

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1810.28	28	<b>Interstage Gap Time</b> The time gap between functioning of the fuze for each stage of a multi-stage warhead.	Float	μs	x ≤ 4,194,000
1810.29	29	<b>Request ID</b> A mission Unique ID to distinguish one request from another.	Unsigned 2	None	No Restrictions

**Table 4 - 117: Message #1810: Fuze Control****4.1.10.12 Message #1811: Seeker Sensor Control**

This message shall handle seeker and sensor control functions for the selected store [DLI 0545]. If the triplet (Hardpoint ID, Carriage ID, and Store ID) is set to no selection (0, 0, 0), then the Weapon Package ID and Weapon Package Firing Order are used to select the store.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1811.01	1	<b>Time Stamp</b>	Double	s	Refer to Section 1.7.2
1811.02	2	<b>Vehicle ID</b>	Integer 4	None	Refer to Section 1.7.5
1811.03	3	<b>CUCS ID</b>	Integer 4	None	Refer to Section 1.7.5
1811.04	4	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1811.05	5	Hardpoint ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Hdp #1 0x00000002 = Hdp #2 0x00000004 = Hdp #3 0x00000008 = Hdp #4 0x00000010 = Hdp #5 0x00000020 = Hdp #6 0x00000040 = Hdp #7 0x00000080 = Hdp #8 0x00000100 = Hdp #9 0x00000200 = Hdp #10 0x00000400 = Hdp #11 0x00000800 = Hdp #12 0x00001000 = Hdp #13 0x00002000 = Hdp #14 0x00004000 = Hdp #15 0x00008000 = Hdp #16 0x00010000 = Hdp #17 0x00020000 = Hdp #18 0x00040000 = Hdp #19 0x00080000 = Hdp #20 0x00100000 = Hdp #21 0x00200000 = Hdp #22 0x00400000 = Hdp #23 0x00800000 = Hdp #24 0x01000000 = Hdp #25 0x02000000 = Hdp #26 0x04000000 = Hdp #27 0x08000000 = Hdp #28 0x10000000 = Hdp #29 0x20000000 = Hdp #30 0x40000000 = Hdp #31 0x80000000 = Hdp #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1811.06	6	Carriage ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Crg #1 0x00000002 = Crg #2 0x00000004 = Crg #3 0x00000008 = Crg #4 0x00000010 = Crg #5 0x00000020 = Crg #6 0x00000040 = Crg #7 0x00000080 = Crg #8 0x00000100 = Crg #9 0x00000200 = Crg #10 0x00000400 = Crg #11 0x00000800 = Crg #12 0x00001000 = Crg #13 0x00002000 = Crg #14 0x00004000 = Crg #15 0x00008000 = Crg #16 0x00010000 = Crg #17 0x00020000 = Crg #18 0x00040000 = Crg #19 0x00080000 = Crg #20 0x00100000 = Crg #21 0x00200000 = Crg #22 0x00400000 = Crg #23 0x00800000 = Crg #24 0x01000000 = Crg #25 0x02000000 = Crg #26 0x04000000 = Crg #27 0x08000000 = Crg #28 0x10000000 = Crg #29 0x20000000 = Crg #30 0x40000000 = Crg #31 0x80000000 = Crg #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1811.07	7	<b>Store ID</b>	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Str #1 0x00000002 = Str #2 0x00000004 = Str #3 0x00000008 = Str #4 0x00000010 = Str #5 0x00000020 = Str #6 0x00000040 = Str #7 0x00000080 = Str #8 0x00000100 = Str #9 0x00000200 = Str #10 0x00000400 = Str #11 0x00000800 = Str #12 0x00001000 = Str #13 0x00002000 = Str #14 0x00004000 = Str #15 0x00008000 = Str #16 0x00010000 = Str #17 0x00020000 = Str #18 0x00040000 = Str #19 0x00080000 = Str #20 0x00100000 = Str #21 0x00200000 = Str #22 0x00400000 = Str #23 0x00800000 = Str #24 0x01000000 = Str #25 0x02000000 = Str #26 0x04000000 = Str #27 0x08000000 = Str #28 0x10000000 = Str #29 0x20000000 = Str #30 0x40000000 = Str #31 0x80000000 = Str #32
1811.08	8	<b>Weapon Package ID</b>  A value of "255" selects the default weapon package.	Unsigned 1	None	1 ≤ x
1811.09	9	<b>Weapon Package Firing Order</b>	Unsigned 1	None	1 ≤ x
1811.10	10	<b>Seeker Mode Command</b>	Unsigned 1	Enumerated	0 = Store Boresight 1 = Slave 2 = Point Track 3 = Area Track 4 = Offset Track 5 = Scan 6 = Not Applicable 7 - 15 = Reserved 16 - 255 = Weapon Specific
1811.11	11	<b>Polarity Command</b>	Unsigned 1	Enumerated	0 = Auto 1 = Black Hot 2 = White Hot 3 = Not Applicable 4 - 15 = Reserved 16 - 255 = Weapon Specific

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1811.12	12	<b>Slew Coordinate System Reference</b>  Store Specific Range	Unsigned 1	Enumerated	0 = Mission Store Seeker/Sensor Coordinate System 1 = Platform Body Coordinate System 2 = Local Level Wander Azimuth Coordinate System 3 - 15 = Reserved 16 - 255 = Weapon Specific
1811.13	13	<b>Slew Azimuth Command</b>  Store Specific Range	Float	rad/s	No Restrictions
1811.14	14	<b>Slew Elevation Command</b>  Store Specific Range	Float	rad/s	No Restrictions
1811.15	15	<b>Slave Coordinate System Reference</b>  Store Specific Range	Unsigned 1	Enumerated	0 = Mission Store Seeker/Sensor Coordinate System 1 = Platform Body Coordinate System 2 = Local Level Wander Azimuth Coordinate System 3 - 15 = Reserved 16 - 255 = Weapon Specific
1811.16	16	<b>Slave Azimuth Command</b>  Store Specific Range	Float	rad	No Restrictions
1811.17	17	<b>Slave Elevation Command</b>  Store Specific Range	Float	rad	No Restrictions
1811.18	18	<b>Slave Command X - Unit Vector</b>	Float	None	-1 ≤ x ≤ 1
1811.19	19	<b>Slave Command Y - Unit Vector</b>	Float	None	-1 ≤ x ≤ 1
1811.20	20	<b>Slave Command Z - Unit Vector</b>	Float	None	-1 ≤ x ≤ 1
1811.21	21	<b>Zoom Command</b>	Unsigned 1	Enumerated	0 = Auto 1 = Zoom In 2 = Zoom Out 3 = Not Applicable 4 - 15 = Reserved 16 - 255 = Weapon Specific
1811.22	22	<b>Seeker LOS Source</b>	Unsigned 1	Enumerated	0 = Slave Az/EI 1 = Slave XYZ 2 = Target Location 3 = Not Applicable 4 - 15 = Reserved 16 - 255 = Weapon Specific

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1811.23	23	<b>Passive Sensor Control</b>	Unsigned 1	Enumerated	0 = Off 1 = On 2 = On Before and After Launch 3 = On After Launch 4 = Not Applicable 5 - 15 = Reserved 16 - 255 = Weapon Specific
1811.24	24	<b>Active Sensor Control</b>	Unsigned 1	Enumerated	0 = Sensor Off (Default) 1 = Standby 2 = On Before and After Launch 3 = On After Launch Only 4 = Not Applicable 5 - 15 = Reserved 16 - 255 = Weapon Specific
1811.25	25	<b>Lock On Control</b>	Unsigned 1	Enumerated	0 = Disabled 1 = Lock On Before Launch (LOBL) 2 = Lock On After Launch (LOAL) 3 = On After Launch 4 = Not Applicable 5 - 15 = Reserved 16 - 255 = Weapon Specific
1811.26	26	<b>Trajectory Control</b>	Unsigned 1	Enumerated	0 = Low 1 = High 2 = Direct 3 = Not Applicable 4 - 255 = Weapon Specific
1811.27	27	<b>Target Designate</b>	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled 2 = Not Applicable 3 - 255 = Weapon Specific
1811.28	28	<b>Active Seeker Frequency Enable</b>  Enables the active seeker frequency fields. If enabled, the UA processes fields 26-28. If disabled, the UA ignores Unique IDs #1811.26-1811.28.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1811.29	29	<b>Frequency Code Prefix</b>	Character 2	None	No Restrictions
1811.30	30	<b>Frequency Code Suffix</b>	Unsigned 1	None	No Restrictions
1811.31	31	<b>Target Priority Control</b>  Provides the capability to select between preplanned Target Prioritization Lists or an operator entered target priority list loaded in mission store memory.	Unsigned 1	Enumerated	0 = No Target Prioritization List 1 = Operator Entered List 2 - 255 = Preplanned Target List
1811.32	32	<b>Target Priority 1</b>  Operator entered target class (highest priority).	Unsigned 1	Enumerated	0 - 255 = Weapon Specific Target Class

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1811.33	33	<b>Target Priority 2</b> Operator entered target class.	Unsigned 1	Enumerated	0 - 255 = Weapon Specific Target Class
1811.34	34	<b>Target Priority 3</b> Operator entered target class (lowest priority).	Unsigned 1	Enumerated	0 - 255 = Weapon Specific Target Class
1811.35	35	<b>Abort on Target Priority</b> Commands a mission store to abort its post-release mission prior to impact.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled 2 = Not Applicable 3 - 15 = Reserved 16 - 255 = Weapon Specific
1811.36	36	<b>Boresight Correction Enabled</b>	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled 2 = Not Applicable 3 - 15 = Reserved 16 - 255 = Weapon Specific
1811.37	37	<b>Apply Boresight Correction</b>	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled 2 = Not Applicable 3 - 15 = Reserved 16 - 255 = Weapon Specific
1811.38	38	<b>Request ID</b> A mission Unique ID to distinguish one request from another.	Unsigned 2	None	No Restrictions

**Table 4 - 118: Message #1811: Seeker Sensor Control****4.1.10.13 Message #1812: Weapon Laser Control**

This message shall control critical laser parameters for the selected store [DLI 0546]. If the triplet (Hardpoint ID, Carriage ID, and Store ID) is set to no selection (0, 0, 0), then the Weapon Package ID and Weapon Package Firing Order are used to select the store.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1812.01	1	<b>Time Stamp</b>	Double	s	Refer to Section 1.7.2
1812.02	2	<b>Vehicle ID</b>	Integer 4	None	Refer to Section 1.7.5
1812.03	3	<b>CUCS ID</b>	Integer 4	None	Refer to Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1812.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1812.05	5	Hardpoint ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Hdp #1 0x00000002 = Hdp #2 0x00000004 = Hdp #3 0x00000008 = Hdp #4 0x00000010 = Hdp #5 0x00000020 = Hdp #6 0x00000040 = Hdp #7 0x00000080 = Hdp #8 0x00000100 = Hdp #9 0x00000200 = Hdp #10 0x00000400 = Hdp #11 0x00000800 = Hdp #12 0x00001000 = Hdp #13 0x00002000 = Hdp #14 0x00004000 = Hdp #15 0x00008000 = Hdp #16 0x00010000 = Hdp #17 0x00020000 = Hdp #18 0x00040000 = Hdp #19 0x00080000 = Hdp #20 0x00100000 = Hdp #21 0x00200000 = Hdp #22 0x00400000 = Hdp #23 0x00800000 = Hdp #24 0x01000000 = Hdp #25 0x02000000 = Hdp #26 0x04000000 = Hdp #27 0x08000000 = Hdp #28 0x10000000 = Hdp #29 0x20000000 = Hdp #30 0x40000000 = Hdp #31 0x80000000 = Hdp #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1812.06	6	Carriage ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Crg #1 0x00000002 = Crg #2 0x00000004 = Crg #3 0x00000008 = Crg #4 0x00000010 = Crg #5 0x00000020 = Crg #6 0x00000040 = Crg #7 0x00000080 = Crg #8 0x00000100 = Crg #9 0x00000200 = Crg #10 0x00000400 = Crg #11 0x00000800 = Crg #12 0x00001000 = Crg #13 0x00002000 = Crg #14 0x00004000 = Crg #15 0x00008000 = Crg #16 0x00010000 = Crg #17 0x00020000 = Crg #18 0x00040000 = Crg #19 0x00080000 = Crg #20 0x00100000 = Crg #21 0x00200000 = Crg #22 0x00400000 = Crg #23 0x00800000 = Crg #24 0x01000000 = Crg #25 0x02000000 = Crg #26 0x04000000 = Crg #27 0x08000000 = Crg #28 0x10000000 = Crg #29 0x20000000 = Crg #30 0x40000000 = Crg #31 0x80000000 = Crg #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1812.07	7	<b>Store ID</b>	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Str #1 0x00000002 = Str #2 0x00000004 = Str #3 0x00000008 = Str #4 0x00000010 = Str #5 0x00000020 = Str #6 0x00000040 = Str #7 0x00000080 = Str #8 0x00000100 = Str #9 0x00000200 = Str #10 0x00000400 = Str #11 0x00000800 = Str #12 0x00001000 = Str #13 0x00002000 = Str #14 0x00004000 = Str #15 0x00008000 = Str #16 0x00010000 = Str #17 0x00020000 = Str #18 0x00040000 = Str #19 0x00080000 = Str #20 0x00100000 = Str #21 0x00200000 = Str #22 0x00400000 = Str #23 0x00800000 = Str #24 0x01000000 = Str #25 0x02000000 = Str #26 0x04000000 = Str #27 0x08000000 = Str #28 0x10000000 = Str #29 0x20000000 = Str #30 0x40000000 = Str #31 0x80000000 = Str #32
1812.08	8	<b>Weapon Package ID</b>  A value of "255" selects the default weapon package.	Unsigned 1	None	1 ≤ x
1812.09	9	<b>Weapon Package Firing Order</b>	Unsigned 1	None	1 ≤ x
1812.10	10	<b>Laser Mode</b>	Unsigned 1	Enumerated	0 - 255 = Store-specific
1812.11	11	<b>Laser Code</b>  Laser Illuminator Code per STANAG 5516 (Ed 2) (Link 16) Page E-3-527 DFI #1676 DUI 001.	Unsigned 2	None	No Restrictions
1812.12	12	<b>Laser Transmitter Control</b>  Controls the mission store laser transmitter.	Unsigned 1	Enumerated	0 = N/A 1 = Off 2 = Standby 3 = On Before and After Launch 4 = On After Launch Only
1812.13	13	<b>Laser Arm</b>  Arms the mission store laser.	Unsigned 1	Enumerated	0 = N/A 1 = Safe 2 = Arm

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1812.14	14	<b>Laser Transmitter Output</b> Controls the mission store laser transmitter output.	Unsigned 1	Enumerated	0 = N/A 1 = Reduced Power Eye Safe Mode 2 = Tactical Mode
1812.15	15	<b>Laser Receiver Control</b> Controls the mission store laser receiver.	Unsigned 1	Enumerated	0 = Off 1 = Standby 2 = On Before and After Launch 3 = On After Launch Only
1812.16	16	<b>Request ID</b> A mission Unique ID to distinguish one request from another.	Unsigned 2	None	No Restrictions

**Table 4 - 119: Message #1812: Weapon Laser Control****4.1.10.14 Message #1813: Jettison Store**

1. This message shall command the UA to jettison a particular store [DLI 0547]. The UA responds with a Primary Store Status Message (#1903) reporting on the success or failure of the operation. Jettison Command is a unique 4-byte unsigned value. Thus, the Jettison Command is TRUE if the value received is equal to the specified value and FALSE otherwise. Note that multiple stations can be jettisoned with a single command. If the store address is (0, 0, 0), then the entire loadout is jettisoned. If the store address is (N, 0, 0), then all the stores for Hard Point ID = N are jettisoned. Finally, if the store address is (N, M, 0), then the carriage with ID = M is jettisoned from Hard Point N.
2. Jettison Command sequencing consists of x keyed messages to optionally be received within a specified time period. The key value is generated for each mission sent via the Publish Key Message (#1816). Jettison Store transmits the total number of messages to be received, the bounding time period in seconds (if 1808.06 = zero then no period is specified), and the index of the current message where index is between 1 and x.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1813.01	1	<b>Time Stamp</b>	Double	s	Refer to Section 1.7.2
1813.02	2	<b>Vehicle ID</b>	Integer 4	None	Refer to Section 1.7.5
1813.03	3	<b>CUCS ID</b>	Integer 4	None	Refer to Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1813.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1813.05	5	Hardpoint ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Hdp #1 0x00000002 = Hdp #2 0x00000004 = Hdp #3 0x00000008 = Hdp #4 0x00000010 = Hdp #5 0x00000020 = Hdp #6 0x00000040 = Hdp #7 0x00000080 = Hdp #8 0x00000100 = Hdp #9 0x00000200 = Hdp #10 0x00000400 = Hdp #11 0x00000800 = Hdp #12 0x00001000 = Hdp #13 0x00002000 = Hdp #14 0x00004000 = Hdp #15 0x00008000 = Hdp #16 0x00010000 = Hdp #17 0x00020000 = Hdp #18 0x00040000 = Hdp #19 0x00080000 = Hdp #20 0x00100000 = Hdp #21 0x00200000 = Hdp #22 0x00400000 = Hdp #23 0x00800000 = Hdp #24 0x01000000 = Hdp #25 0x02000000 = Hdp #26 0x04000000 = Hdp #27 0x08000000 = Hdp #28 0x10000000 = Hdp #29 0x20000000 = Hdp #30 0x40000000 = Hdp #31 0x80000000 = Hdp #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1813.06	6	Carriage ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Crg #1 0x00000002 = Crg #2 0x00000004 = Crg #3 0x00000008 = Crg #4 0x00000010 = Crg #5 0x00000020 = Crg #6 0x00000040 = Crg #7 0x00000080 = Crg #8 0x00000100 = Crg #9 0x00000200 = Crg #10 0x00000400 = Crg #11 0x00000800 = Crg #12 0x00001000 = Crg #13 0x00002000 = Crg #14 0x00004000 = Crg #15 0x00008000 = Crg #16 0x00010000 = Crg #17 0x00020000 = Crg #18 0x00040000 = Crg #19 0x00080000 = Crg #20 0x00100000 = Crg #21 0x00200000 = Crg #22 0x00400000 = Crg #23 0x00800000 = Crg #24 0x01000000 = Crg #25 0x02000000 = Crg #26 0x04000000 = Crg #27 0x08000000 = Crg #28 0x10000000 = Crg #29 0x20000000 = Crg #30 0x40000000 = Crg #31 0x80000000 = Crg #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1813.07	7	<b>Store ID</b>	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Str #1 0x00000002 = Str #2 0x00000004 = Str #3 0x00000008 = Str #4 0x00000010 = Str #5 0x00000020 = Str #6 0x00000040 = Str #7 0x00000080 = Str #8 0x00000100 = Str #9 0x00000200 = Str #10 0x00000400 = Str #11 0x00000800 = Str #12 0x00001000 = Str #13 0x00002000 = Str #14 0x00004000 = Str #15 0x00008000 = Str #16 0x00010000 = Str #17 0x00020000 = Str #18 0x00040000 = Str #19 0x00080000 = Str #20 0x00100000 = Str #21 0x00200000 = Str #22 0x00400000 = Str #23 0x00800000 = Str #24 0x01000000 = Str #25 0x02000000 = Str #26 0x04000000 = Str #27 0x08000000 = Str #28 0x10000000 = Str #29 0x20000000 = Str #30 0x40000000 = Str #31 0x80000000 = Str #32
1813.08	8	<b>Jettison Request ID</b>  The mission Unique ID for this series of jettison requests.	Unsigned 1	None	$1 \leq x$
1813.09	9	<b>Jettison Request Sequence ID</b>  The ID of the current request out of the x requests for this sequence.	Unsigned 1	None	$1 \leq x$
1813.10	10	<b>Jettison Command</b>  Key Value = Enable All Others = Disable  Key Value is mission dependent and transmitted via Message #1816 Publish Key.	Unsigned 4	None	No Restrictions

**Table 4 - 120: Message #1813: Jettison Store**

#### 4.1.10.15 Message #1814: Store Inventory Status Request

This message shall command the UA system to send the inventory status on all the stores it is managing [DLI 0548]. This triggers the UA to send one Store Specific Information Response (#1901) with x Store Inventory Status Messages (#1902) to follow.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1814.01	1	Time Stamp	Double	s	Refer to Section 1.7.2
1814.02	2	Vehicle ID	Integer 4	None	Refer to Section 1.7.5
1814.03	3	CUCS ID	Integer 4	None	Refer to Section 1.7.5
1814.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
1814.05	5	Inventory Request ID  A mission Unique ID to distinguish one request from another.	Unsigned 1	None	$1 \leq x$

Table 4 - 121: Message #1814: Store Inventory Status Request

#### 4.1.10.16 Message #1815: Modify Target Command

This message shall be used to modify a target [DLI 0549].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1815.01	1	Time Stamp	Double	s	Refer to Section 1.7.2
1815.02	2	Vehicle ID	Integer 4	None	Refer to Section 1.7.5
1815.03	3	CUCS ID	Integer 4	None	Refer to Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1815.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1815.05	5	Hardpoint ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Hdp #1 0x00000002 = Hdp #2 0x00000004 = Hdp #3 0x00000008 = Hdp #4 0x00000010 = Hdp #5 0x00000020 = Hdp #6 0x00000040 = Hdp #7 0x00000080 = Hdp #8 0x00000100 = Hdp #9 0x00000200 = Hdp #10 0x00000400 = Hdp #11 0x00000800 = Hdp #12 0x00001000 = Hdp #13 0x00002000 = Hdp #14 0x00004000 = Hdp #15 0x00008000 = Hdp #16 0x00010000 = Hdp #17 0x00020000 = Hdp #18 0x00040000 = Hdp #19 0x00080000 = Hdp #20 0x00100000 = Hdp #21 0x00200000 = Hdp #22 0x00400000 = Hdp #23 0x00800000 = Hdp #24 0x01000000 = Hdp #25 0x02000000 = Hdp #26 0x04000000 = Hdp #27 0x08000000 = Hdp #28 0x10000000 = Hdp #29 0x20000000 = Hdp #30 0x40000000 = Hdp #31 0x80000000 = Hdp #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1815.06	6	Carriage ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Crg #1 0x00000002 = Crg #2 0x00000004 = Crg #3 0x00000008 = Crg #4 0x00000010 = Crg #5 0x00000020 = Crg #6 0x00000040 = Crg #7 0x00000080 = Crg #8 0x00000100 = Crg #9 0x00000200 = Crg #10 0x00000400 = Crg #11 0x00000800 = Crg #12 0x00001000 = Crg #13 0x00002000 = Crg #14 0x00004000 = Crg #15 0x00008000 = Crg #16 0x00010000 = Crg #17 0x00020000 = Crg #18 0x00040000 = Crg #19 0x00080000 = Crg #20 0x00100000 = Crg #21 0x00200000 = Crg #22 0x00400000 = Crg #23 0x00800000 = Crg #24 0x01000000 = Crg #25 0x02000000 = Crg #26 0x04000000 = Crg #27 0x08000000 = Crg #28 0x10000000 = Crg #29 0x20000000 = Crg #30 0x40000000 = Crg #31 0x80000000 = Crg #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1815.07	7	<b>Store ID</b>	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Str #1 0x00000002 = Str #2 0x00000004 = Str #3 0x00000008 = Str #4 0x00000010 = Str #5 0x00000020 = Str #6 0x00000040 = Str #7 0x00000080 = Str #8 0x00000100 = Str #9 0x00000200 = Str #10 0x00000400 = Str #11 0x00000800 = Str #12 0x00001000 = Str #13 0x00002000 = Str #14 0x00004000 = Str #15 0x00008000 = Str #16 0x00010000 = Str #17 0x00020000 = Str #18 0x00040000 = Str #19 0x00080000 = Str #20 0x00100000 = Str #21 0x00200000 = Str #22 0x00400000 = Str #23 0x00800000 = Str #24 0x01000000 = Str #25 0x02000000 = Str #26 0x04000000 = Str #27 0x08000000 = Str #28 0x10000000 = Str #29 0x20000000 = Str #30 0x40000000 = Str #31 0x80000000 = Str #32
1815.08	8	<b>Weapon Package ID</b> A value of "255" selects the default weapon package.	Unsigned 1	None	$1 \leq x$
1815.09	9	<b>Weapon Package Firing Order</b>	Unsigned 1	None	$1 \leq x$
1815.10	10	<b>Mission Number</b>	Unsigned 2	None	No Restrictions
1815.11	11	<b>PF Control</b>	Unsigned 1	Enumerated	0 = Use PF Default/Panel Settings 1 = Use PF Data
1815.12	12	<b>Flight Mode</b>	Unsigned 1	Enumerated	0 = Default Store 1 = Range On Heading 2 = Use Attack Heading 3 = Direct Trajectory Store
1815.13	13	<b>Target Class Type</b>	Unsigned 1	Enumerated	0 - 255 = Weapon Specific Target Class
1815.14	14	<b>Latitude</b>	Double	rad	$-\pi/2 \leq x \leq \pi/2$
1815.15	15	<b>Longitude</b>	Double	rad	$-\pi \leq x \leq \pi$
1815.16	16	<b>Altitude</b>	Float	m	$-500 \leq x \leq 10,000$
1815.17	17	<b>Velocity</b>	Float	m/s	$0 \leq x \leq 8,192$
1815.18	18	<b>Attack Heading</b>	Float	rad	$-\pi \leq x \leq \pi$
1815.19	19	<b>Impact Angle</b>	Float	rad	$0 \leq x \leq \pi/2$

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1815.20	20	Target Wind North	Integer 1	None	No Restrictions
1815.21	21	Target Wind East	Integer 1	None	No Restrictions
1815.22	22	Ingress/Cruise Mach	Float	Mach	$0 \leq x \leq 8$
1815.23	23	Ingress/Cruise Altitude	Unsigned 2	m	$x \leq 65,534$
1815.24	24	Range	Double	m	$0 \leq x \leq 16,383$
1815.25	25	Endgame Entry Altitude	Double	m	$-16,383 \leq x \leq 16,383$
1815.26	26	Offset North	Double	m	$-16,383 \leq x \leq 16,383$
1815.27	27	Offset East	Double	m	$-16,383 \leq x \leq 16,383$
1815.28	28	Offset Down	Double	m	$-16,383 \leq x \leq 16,383$
1815.29	29	Target Velocity North	Double	m/s	$-8,192 \leq x \leq 8,192$
1815.30	30	Target Velocity East	Double	m/s	$-8,192 \leq x \leq 8,192$
1815.31	31	North Velocity Uncertainty	Double	m/s	$-8,192 \leq x \leq 8,192$
1815.32	32	East Velocity Uncertainty	Double	m/s	$-8,192 \leq x \leq 8,192$
1815.33	33	TLE Major Axis	Unsigned 2	m	$x \leq 4,080$
1815.34	34	TLE Minor Axis	Unsigned 2	m	$x \leq 4,080$
1815.35	35	TLE Direction	Float	rad	$0 \leq x \leq \pi$
1815.36	36	TLE Vertical	Unsigned 2	m	$x \leq 2,040$
1815.37	37	Spin Rate	Unsigned 2	RPM	No Restrictions
1815.38	38	Aircraft Targeting	Unsigned 1	Enumerated	0 = Disable 1 = Enable
1815.39	39	Target Data Sequence ID  Unique ID of this message instance for a given (hardpoint, carriage, store) or (weapon package, weapon package firing order) tuple.	Unsigned 4	None	No Restrictions

**Table 4 - 122: Message #1815: Modify Target****4.1.10.17 Message #1816: Publish Key**

This message shall set the current mission dependent key for Fire and Jettison [DLI 0550]. It can be expanded to other quantities in the future. Generation of the key is implementation-dependent.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1816.01	1	Time Stamp	Double	s	Refer to Section 1.7.2
1816.02	2	Vehicle ID	Integer 4	None	Refer to Section 1.7.5
1816.03	3	CUCS ID	Integer 4	None	Refer to Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1816.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
1816.05	5	Keyed Quantity	Unsigned 1	Enumerated	0 = Fire Request Key 1 = Master Arm Request Key 2 = Jettison Request Key 3 - 254 = System Specific 255 = All
1816.06	6	Key Value	Unsigned 4	None	No Restrictions

**Table 4 - 123: Message #1816: Publish Key****4.1.10.18 Message #1817: Fuze Arm Delay From Release**

This message shall send the Fuze Arm Delay From Release [DLI 0551]. Because of safety considerations the Fuze Arm Delay From Release is sent in this separate message. If the triplet (Hardpoint ID, Carriage ID, and Store ID) is set to no selection (0, 0, 0), then the Weapon Package ID and Weapon Package Firing Order are used to select the store.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1817.01	1	Time Stamp	Double	s	Refer to Section 1.7.2
1817.02	2	Vehicle ID	Integer 4	None	Refer to Section 1.7.5
1817.03	3	CUCS ID	Integer 4	None	Refer to Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1817.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1817.05	5	Hardpoint ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Hdp #1 0x00000002 = Hdp #2 0x00000004 = Hdp #3 0x00000008 = Hdp #4 0x00000010 = Hdp #5 0x00000020 = Hdp #6 0x00000040 = Hdp #7 0x00000080 = Hdp #8 0x00000100 = Hdp #9 0x00000200 = Hdp #10 0x00000400 = Hdp #11 0x00000800 = Hdp #12 0x00001000 = Hdp #13 0x00002000 = Hdp #14 0x00004000 = Hdp #15 0x00008000 = Hdp #16 0x00010000 = Hdp #17 0x00020000 = Hdp #18 0x00040000 = Hdp #19 0x00080000 = Hdp #20 0x00100000 = Hdp #21 0x00200000 = Hdp #22 0x00400000 = Hdp #23 0x00800000 = Hdp #24 0x01000000 = Hdp #25 0x02000000 = Hdp #26 0x04000000 = Hdp #27 0x08000000 = Hdp #28 0x10000000 = Hdp #29 0x20000000 = Hdp #30 0x40000000 = Hdp #31 0x80000000 = Hdp #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1817.06	6	Carriage ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Crg #1 0x00000002 = Crg #2 0x00000004 = Crg #3 0x00000008 = Crg #4 0x00000010 = Crg #5 0x00000020 = Crg #6 0x00000040 = Crg #7 0x00000080 = Crg #8 0x00000100 = Crg #9 0x00000200 = Crg #10 0x00000400 = Crg #11 0x00000800 = Crg #12 0x00001000 = Crg #13 0x00002000 = Crg #14 0x00004000 = Crg #15 0x00008000 = Crg #16 0x00010000 = Crg #17 0x00020000 = Crg #18 0x00040000 = Crg #19 0x00080000 = Crg #20 0x00100000 = Crg #21 0x00200000 = Crg #22 0x00400000 = Crg #23 0x00800000 = Crg #24 0x01000000 = Crg #25 0x02000000 = Crg #26 0x04000000 = Crg #27 0x08000000 = Crg #28 0x10000000 = Crg #29 0x20000000 = Crg #30 0x40000000 = Crg #31 0x80000000 = Crg #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1817.07	7	<b>Store ID</b>	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Str #1 0x00000002 = Str #2 0x00000004 = Str #3 0x00000008 = Str #4 0x00000010 = Str #5 0x00000020 = Str #6 0x00000040 = Str #7 0x00000080 = Str #8 0x00000100 = Str #9 0x00000200 = Str #10 0x00000400 = Str #11 0x00000800 = Str #12 0x00001000 = Str #13 0x00002000 = Str #14 0x00004000 = Str #15 0x00008000 = Str #16 0x00010000 = Str #17 0x00020000 = Str #18 0x00040000 = Str #19 0x00080000 = Str #20 0x00100000 = Str #21 0x00200000 = Str #22 0x00400000 = Str #23 0x00800000 = Str #24 0x01000000 = Str #25 0x02000000 = Str #26 0x04000000 = Str #27 0x08000000 = Str #28 0x10000000 = Str #29 0x20000000 = Str #30 0x40000000 = Str #31 0x80000000 = Str #32
1817.08	8	<b>Weapon Package ID</b>  A value of "255" selects the default weapon package.	Unsigned 1	None	$1 \leq x$
1817.09	9	<b>Weapon Package Firing Order</b>	Unsigned 1	None	$1 \leq x$
1817.10	10	<b>Arm Delay From Release</b>	Double	$\mu s$	$0 \leq x \leq 2,361,099,999,999,999,900,000.0$

**Table 4 - 124: Message #1817: Fuze Arm Delay From Release****4.1.10.19 Message #1818: Remote Designator Position**

This message shall designate the position of the remote designator [DLI 0552].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1818.01	1	<b>Time Stamp</b>	Double	s	Refer to Section 1.7.2
1818.02	2	<b>Vehicle ID</b>	Integer 4	None	Refer to Section 1.7.5
1818.03	3	<b>CUCS ID</b>	Integer 4	None	Refer to Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1818.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
1818.05	5	Latitude	Double	rad	$-\pi/2 \leq x \leq \pi/2$
1818.06	6	Longitude	Double	rad	$-\pi \leq x \leq \pi$
1818.07	7	Altitude	Float	m	$-1,000 \leq x \leq 100,000$

Table 4 - 125: Message #1818: Remote Designator Position

#### 4.1.10.20 Message #1819: Dynamic Weapon Package Control

This message shall handle dynamic, user defined weapon packages [DLI 0553]. A dynamic weapon package is defined as a set of stores with a firing sequence defined by the user at mission time. This message prepares the UA to receive x subsequent messages that describe the weapon types to be included in the package. It is assumed that the UA will assign store locations to the weapon package store types.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1819.01	1	Time Stamp	Double	s	Refer to Section 1.7.2
1819.02	2	Vehicle ID	Integer 4	None	Refer to Section 1.7.5
1819.03	3	CUCS ID	Integer 4	None	Refer to Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1819.04	4	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
1819.05	5	<b>Weapon Package ID</b>  A value of "255" selects the default weapon package.	Unsigned 1	None	$1 \leq x$
1819.06	6	<b>Number of Weapons</b>	Unsigned 1	None	$1 \leq x$

**Table 4 - 126: Message #1819: Dynamic Weapon Package Control**

#### 4.1.10.21 Message #1820: Dynamic Weapon Package Store Request

This message shall assign weapon types to dynamic weapon packages [DLI.0554]. The CUCS sends “x” of this message to assign weapon types to dynamic weapon packages. Control of the messages is maintained by the Weapon Package ID.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1820.01	1	Time Stamp	Double	s	Refer to Section 1.7.2
1820.02	2	Vehicle ID	Integer 4	None	Refer to Section 1.7.5
1820.03	3	CUCS ID	Integer 4	None	Refer to Section 1.7.5
1820.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
1820.05	5	Weapon Package ID  ID must match one sent in a previous #1819.  A value of “255” selects the default weapon package.	Unsigned 1	None	$1 \leq x$
1820.06	6	Fire Order Index  Index in the firing order for store mapped to this weapon type.	Unsigned 1	None	$1 \leq x$
1820.07	7	Store Type  Weapon Specific	Unsigned 2	None	No Restrictions

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1820.08	8	<b>Store Variant</b> Weapon Specific	Unsigned 1	None	No Restrictions

**Table 4 - 127: Message #1820: Dynamic Weapon Package Store Request****4.1.10.22 Message #1821: Initialize Dynamic Weapon Package**

This message shall cause the UA to initialize all the stores defined by the current weapon package [DLI 0555].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1821.01	1	<b>Time Stamp</b>	Double	s	Refer to Section 1.7.2
1821.02	2	<b>Vehicle ID</b>	Integer 4	None	Refer to Section 1.7.5
1821.03	3	<b>CUCS ID</b>	Integer 4	None	Refer to Section 1.7.5
1821.04	4	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
1821.05	5	<b>Weapon Package ID</b>  A value of "255" selects the default weapon package.	Unsigned 1	None	$1 \leq x$

**Table 4 - 128: Message #1821: Initialize Dynamic Weapon Package**

#### 4.1.10.23 Message #1822: Rack Control

This message shall perform general rack and bomb rack control [DLI 0556].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1822.01	1	Time Stamp	Double	s	Refer to Section 1.7.2
1822.02	2	Vehicle ID	Integer 4	None	Refer to Section 1.7.5
1822.03	3	CUCS ID	Integer 4	None	Refer to Section 1.7.5
1822.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1822.05	5	Hardpoint ID	Unsigned 4	Bitmapped	0x00000001 = Hdp #1 0x00000002 = Hdp #2 0x00000004 = Hdp #3 0x00000008 = Hdp #4 0x00000010 = Hdp #5 0x00000020 = Hdp #6 0x00000040 = Hdp #7 0x00000080 = Hdp #8 0x00000100 = Hdp #9 0x00000200 = Hdp #10 0x00000400 = Hdp #11 0x00000800 = Hdp #12 0x00001000 = Hdp #13 0x00002000 = Hdp #14 0x00004000 = Hdp #15 0x00008000 = Hdp #16 0x00010000 = Hdp #17 0x00020000 = Hdp #18 0x00040000 = Hdp #19 0x00080000 = Hdp #20 0x00100000 = Hdp #21 0x00200000 = Hdp #22 0x00400000 = Hdp #23 0x00800000 = Hdp #24 0x01000000 = Hdp #25 0x02000000 = Hdp #26 0x04000000 = Hdp #27 0x08000000 = Hdp #28 0x10000000 = Hdp #29 0x20000000 = Hdp #30 0x40000000 = Hdp #31 0x80000000 = Hdp #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1822.06	6	Carriage ID	Unsigned 4	Bitmapped	0x00000000 = None 0x00000001 = Crg #1 0x00000002 = Crg #2 0x00000004 = Crg #3 0x00000008 = Crg #4 0x00000010 = Crg #5 0x00000020 = Crg #6 0x00000040 = Crg #7 0x00000080 = Crg #8 0x00000100 = Crg #9 0x00000200 = Crg #10 0x00000400 = Crg #11 0x00000800 = Crg #12 0x00001000 = Crg #13 0x00002000 = Crg #14 0x00004000 = Crg #15 0x00008000 = Crg #16 0x00010000 = Crg #17 0x00020000 = Crg #18 0x00040000 = Crg #19 0x00080000 = Crg #20 0x00100000 = Crg #21 0x00200000 = Crg #22 0x00400000 = Crg #23 0x00800000 = Crg #24 0x01000000 = Crg #25 0x02000000 = Crg #26 0x04000000 = Crg #27 0x08000000 = Crg #28 0x10000000 = Crg #29 0x20000000 = Crg #30 0x40000000 = Crg #31 0x80000000 = Crg #32
1822.07	7	Reversible InFlight Lockout (RIFL) Unlock	Unsigned 1	Enumerated	0 = Lock 1 = Unlock
1822.08	8	Nose Arm	Unsigned 1	Enumerated	0 = Disable 1 = Enable
1822.09	9	Center Arm	Unsigned 1	Enumerated	0 = Disable 1 = Enable
1822.10	10	Tail Arm	Unsigned 1	Enumerated	0 = Disable 1 = Enable

**Table 4 - 129: Message #1822: Rack Control****4.1.10.24 Message #1823: Carriage Control**

This message shall perform general carriage system specific control [DLI 0557].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1823.01	1	Time Stamp	Double	s	Refer to Section 1.7.2
1823.02	2	Vehicle ID	Integer 4	None	Refer to Section 1.7.5
1823.03	3	CUCS ID	Integer 4	None	Refer to Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1823.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1823.05	5	Hardpoint ID	Unsigned 4	Bitmapped	0x00000001 = Hdp #1 0x00000002 = Hdp #2 0x00000004 = Hdp #3 0x00000008 = Hdp #4 0x00000010 = Hdp #5 0x00000020 = Hdp #6 0x00000040 = Hdp #7 0x00000080 = Hdp #8 0x00000100 = Hdp #9 0x00000200 = Hdp #10 0x00000400 = Hdp #11 0x00000800 = Hdp #12 0x00001000 = Hdp #13 0x00002000 = Hdp #14 0x00004000 = Hdp #15 0x00008000 = Hdp #16 0x00010000 = Hdp #17 0x00020000 = Hdp #18 0x00040000 = Hdp #19 0x00080000 = Hdp #20 0x00100000 = Hdp #21 0x00200000 = Hdp #22 0x00400000 = Hdp #23 0x00800000 = Hdp #24 0x01000000 = Hdp #25 0x02000000 = Hdp #26 0x04000000 = Hdp #27 0x08000000 = Hdp #28 0x10000000 = Hdp #29 0x20000000 = Hdp #30 0x40000000 = Hdp #31 0x80000000 = Hdp #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1823.06	6	<b>Carriage ID</b>	Unsigned 4	Bitmapped	0x00000001 = Crg #1 0x00000002 = Crg #2 0x00000004 = Crg #3 0x00000008 = Crg #4 0x00000010 = Crg #5 0x00000020 = Crg #6 0x00000040 = Crg #7 0x00000080 = Crg #8 0x00000100 = Crg #9 0x00000200 = Crg #10 0x00000400 = Crg #11 0x00000800 = Crg #12 0x00001000 = Crg #13 0x00002000 = Crg #14 0x00004000 = Crg #15 0x00008000 = Crg #16 0x00010000 = Crg #17 0x00020000 = Crg #18 0x00040000 = Crg #19 0x00080000 = Crg #20 0x00100000 = Crg #21 0x00200000 = Crg #22 0x00400000 = Crg #23 0x00800000 = Crg #24 0x01000000 = Crg #25 0x02000000 = Crg #26 0x04000000 = Crg #27 0x08000000 = Crg #28 0x10000000 = Crg #29 0x20000000 = Crg #30 0x40000000 = Crg #31 0x80000000 = Crg #32
1823.07	7	<b>Power Control</b>	Unsigned 1	Enumerated	0 = Power Off 1 = Power On
1823.08	8	<b>Activate IBIT</b>	Unsigned 1	Enumerated	0 = Disabled 1 = Carriage System Only 2 = Carriage System and All Stores
1823.09	9	<b>Resort Stores</b>  Initiates the carriage system to renumber stores in the release order.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1823.10	10	<b>Compressor Inhibit</b>  Inhibits carriage system compressor operation.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1823.11	11	<b>Telemetry On</b>  Turns on the stores telemetry package.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1823.12	12	<b>Training Mode</b>  Enables Training Mode	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1823.13	13	<b>Training Loadout Code</b>  Identifies the simulated store(s) to be simulated in Training Mode.	Unsigned 2	None	No Restrictions

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1823.14	14	<b>Training Reload</b>  While in training mode resets store load out to the original state. If a store had been released, it will reappear in the load out.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1823.15	15	<b>Erase Command/Authority</b>  Erase sensitive data.	Unsigned 1	Enumerated	0 = Disabled 1 = Erase Sensitive Data 2 = Erase Store OFP 3 - 255 = Store Specific Action

**Table 4 - 130: Message #1823: Carriage Control****4.1.10.25 Message #1824: Secondary Store Control**

This message shall initiate test and simulation functions for store control [DLI 0558]. If the triplet (Hardpoint ID, Carriage ID, and Store ID) is set to no selection (0, 0, 0), then the Weapon Package ID and Weapon Package Firing Order is used to select the store.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1824.01	1	<b>Time Stamp</b>	Double	s	Refer to Section 1.7.2
1824.02	2	<b>Vehicle ID</b>	Integer 4	None	Refer to Section 1.7.5
1824.03	3	<b>CUCS ID</b>	Integer 4	None	Refer to Section 1.7.5
1824.04	4	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1824.05	5	Hardpoint ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Hdp #1 0x00000002 = Hdp #2 0x00000004 = Hdp #3 0x00000008 = Hdp #4 0x00000010 = Hdp #5 0x00000020 = Hdp #6 0x00000040 = Hdp #7 0x00000080 = Hdp #8 0x00000100 = Hdp #9 0x00000200 = Hdp #10 0x00000400 = Hdp #11 0x00000800 = Hdp #12 0x00001000 = Hdp #13 0x00002000 = Hdp #14 0x00004000 = Hdp #15 0x00008000 = Hdp #16 0x00010000 = Hdp #17 0x00020000 = Hdp #18 0x00040000 = Hdp #19 0x00080000 = Hdp #20 0x00100000 = Hdp #21 0x00200000 = Hdp #22 0x00400000 = Hdp #23 0x00800000 = Hdp #24 0x01000000 = Hdp #25 0x02000000 = Hdp #26 0x04000000 = Hdp #27 0x08000000 = Hdp #28 0x10000000 = Hdp #29 0x20000000 = Hdp #30 0x40000000 = Hdp #31 0x80000000 = Hdp #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1824.06	6	Carriage ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Crg #1 0x00000002 = Crg #2 0x00000004 = Crg #3 0x00000008 = Crg #4 0x00000010 = Crg #5 0x00000020 = Crg #6 0x00000040 = Crg #7 0x00000080 = Crg #8 0x00000100 = Crg #9 0x00000200 = Crg #10 0x00000400 = Crg #11 0x00000800 = Crg #12 0x00001000 = Crg #13 0x00002000 = Crg #14 0x00004000 = Crg #15 0x00008000 = Crg #16 0x00010000 = Crg #17 0x00020000 = Crg #18 0x00040000 = Crg #19 0x00080000 = Crg #20 0x00100000 = Crg #21 0x00200000 = Crg #22 0x00400000 = Crg #23 0x00800000 = Crg #24 0x01000000 = Crg #25 0x02000000 = Crg #26 0x04000000 = Crg #27 0x08000000 = Crg #28 0x10000000 = Crg #29 0x20000000 = Crg #30 0x40000000 = Crg #31 0x80000000 = Crg #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1824.07	7	<b>Store ID</b>  A value of “255” selects the default weapon package.	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Str #1 0x00000002 = Str #2 0x00000004 = Str #3 0x00000008 = Str #4 0x00000010 = Str #5 0x00000020 = Str #6 0x00000040 = Str #7 0x00000080 = Str #8 0x00000100 = Str #9 0x00000200 = Str #10 0x00000400 = Str #11 0x00000800 = Str #12 0x00001000 = Str #13 0x00002000 = Str #14 0x00004000 = Str #15 0x00008000 = Str #16 0x00010000 = Str #17 0x00020000 = Str #18 0x00040000 = Str #19 0x00080000 = Str #20 0x00100000 = Str #21 0x00200000 = Str #22 0x00400000 = Str #23 0x00800000 = Str #24 0x01000000 = Str #25 0x02000000 = Str #26 0x04000000 = Str #27 0x08000000 = Str #28 0x10000000 = Str #29 0x20000000 = Str #30 0x40000000 = Str #31 0x80000000 = Str #32
1824.08	8	<b>Weapon Package ID</b>  A value of “255” selects the default weapon package.	Unsigned 1	None	1 ≤ x
1824.09	9	<b>Weapon Package Firing Order</b>	Unsigned 1	None	1 ≤ x
1824.10	10	<b>Telemetry On</b>  Turns on the stores telemetry package.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1824.11	11	<b>Flight Termination Systems On</b>  Enables the FTS system without initiating the mission store internal FTS battery.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1824.12	12	<b>Simulate Release</b>  Commands to the mission store to simulate a release.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1824.13	13	<b>Immediate Sim Flight</b> Commands the mission store to enable post-release free flight operations, while still captive on the platform.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1824.14	14	<b>Timeline Integration</b> Allows for ground timeline integration (box drop) testing of the mission store. The function allows the platform to proceed through a full launch sequence without requiring the mission store to conduct a normal transfer alignment to achieve.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1824.15	15	<b>TM/FTS Batt On</b> Allows the platform to enable and activate the mission store TM/FTS to transition power from platform power to its internal battery in preparation for a test launch.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1824.16	16	<b>Test Function A-J</b> Mission store customizable user defined commands.	Unsigned 1	Enumerated	0 = Disabled 1 = Function A 2 = Function B 3 = Function C 4 = Function D 5 = Function E 6 = Function F 7 = Function G 8 = Function H 9 = Function I 10 = Function J
1824.17	17	<b>Mod Msn Store Location</b> Identifies the mission storage location to use for storage of the mission data.	Unsigned 2	None	No Restrictions
1824.18	18	<b>Secondary Msn Store Location</b> Identifies the secondary mission storage location to use for storage of the mission data.	Unsigned 2	None	No Restrictions
1824.19	19	<b>Training Mode</b> Enables Training Mode.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1824.20	20	<b>Training Reload</b>  While in training mode resets store load out to the original state. If a store had been released, it will reappear in the load out.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1824.21	21	<b>Master Mode Control</b>	Unsigned 1	Enumerated	0 = None 1 = Reserved 2 = Option A 3 = Option B 4 = Option C 5 = Option D 6 = Option E 7 = Option F 8 = Option G 9 = Option H 10 = Option I 11 = Option J 12 = Option K 13 = Option L 14 = Option M 15 = Option N

**Table 4 - 131: Message #1824: Secondary Store Control****4.1.10.26 Message #1825: Store Growth Provision**

This message shall accumulate the store growth provision functions in a single message to allow for sending multiple store specific user defined functions in a single message [DLI 0559]. If the triplet (Hardpoint ID, Carriage ID, and Store ID) is set to no selection (0, 0, 0), then the Weapon Package ID and Weapon Package Firing Order is used to select the store.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1825.01	1	<b>Time Stamp</b>	Double	s	Refer to Section 1.7.2
1825.02	2	<b>Vehicle ID</b>	Integer 4	None	Refer to Section 1.7.5
1825.03	3	<b>CUCS ID</b>	Integer 4	None	Refer to Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1825.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1825.05	5	Hardpoint ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Hdp #1 0x00000002 = Hdp #2 0x00000004 = Hdp #3 0x00000008 = Hdp #4 0x00000010 = Hdp #5 0x00000020 = Hdp #6 0x00000040 = Hdp #7 0x00000080 = Hdp #8 0x00000100 = Hdp #9 0x00000200 = Hdp #10 0x00000400 = Hdp #11 0x00000800 = Hdp #12 0x00001000 = Hdp #13 0x00002000 = Hdp #14 0x00004000 = Hdp #15 0x00008000 = Hdp #16 0x00010000 = Hdp #17 0x00020000 = Hdp #18 0x00040000 = Hdp #19 0x00080000 = Hdp #20 0x00100000 = Hdp #21 0x00200000 = Hdp #22 0x00400000 = Hdp #23 0x00800000 = Hdp #24 0x01000000 = Hdp #25 0x02000000 = Hdp #26 0x04000000 = Hdp #27 0x08000000 = Hdp #28 0x10000000 = Hdp #29 0x20000000 = Hdp #30 0x40000000 = Hdp #31 0x80000000 = Hdp #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1825.06	6	Carriage ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Crg #1 0x00000002 = Crg #2 0x00000004 = Crg #3 0x00000008 = Crg #4 0x00000010 = Crg #5 0x00000020 = Crg #6 0x00000040 = Crg #7 0x00000080 = Crg #8 0x00000100 = Crg #9 0x00000200 = Crg #10 0x00000400 = Crg #11 0x00000800 = Crg #12 0x00001000 = Crg #13 0x00002000 = Crg #14 0x00004000 = Crg #15 0x00008000 = Crg #16 0x00010000 = Crg #17 0x00020000 = Crg #18 0x00040000 = Crg #19 0x00080000 = Crg #20 0x00100000 = Crg #21 0x00200000 = Crg #22 0x00400000 = Crg #23 0x00800000 = Crg #24 0x01000000 = Crg #25 0x02000000 = Crg #26 0x04000000 = Crg #27 0x08000000 = Crg #28 0x10000000 = Crg #29 0x20000000 = Crg #30 0x40000000 = Crg #31 0x80000000 = Crg #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1825.07	7	<b>Store ID</b>	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Str #1 0x00000002 = Str #2 0x00000004 = Str #3 0x00000008 = Str #4 0x00000010 = Str #5 0x00000020 = Str #6 0x00000040 = Str #7 0x00000080 = Str #8 0x00000100 = Str #9 0x00000200 = Str #10 0x00000400 = Str #11 0x00000800 = Str #12 0x00001000 = Str #13 0x00002000 = Str #14 0x00004000 = Str #15 0x00008000 = Str #16 0x00010000 = Str #17 0x00020000 = Str #18 0x00040000 = Str #19 0x00080000 = Str #20 0x00100000 = Str #21 0x00200000 = Str #22 0x00400000 = Str #23 0x00800000 = Str #24 0x01000000 = Str #25 0x02000000 = Str #26 0x04000000 = Str #27 0x08000000 = Str #28 0x10000000 = Str #29 0x20000000 = Str #30 0x40000000 = Str #31 0x80000000 = Str #32
1825.08	8	<b>Weapon Package ID</b>  A value of "255" selects the default weapon package.	Unsigned 1	None	1 ≤ x
1825.09	9	<b>Weapon Package Firing Order</b>	Unsigned 1	None	1 ≤ x
1825.10	10	<b>Growth Provision Function A</b>  Mission store customizable user defined commands.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1825.11	11	<b>Function A User Defined Value</b>  Mission store customizable user defined commands.	Unsigned 2	None	No Restrictions
1825.12	12	<b>Growth Provision Function B</b>  Mission store customizable user defined commands.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1825.13	13	<b>Function B User Defined Value</b>  Mission store customizable user defined commands.	Unsigned 2	None	No Restrictions

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1825.14	14	<b>Growth Provision Function C</b>  Mission store customizable user defined commands.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1825.15	15	<b>Function C User Defined Value</b>  Mission store customizable user defined commands.	Unsigned 2	None	No Restrictions
1825.16	16	<b>Growth Provision Function D</b>  Mission store customizable user defined commands.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1825.17	17	<b>Function D User Defined Value</b>  Mission store customizable user defined commands.	Unsigned 2	None	No Restrictions
1825.18	18	<b>Growth Provision Function E</b>  Mission store customizable user defined commands.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1825.19	19	<b>Function E User Defined Value</b>  Mission store customizable user defined commands.	Unsigned 2	None	No Restrictions
1825.20	20	<b>Growth Provision Function F</b>  Mission store customizable user defined commands.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1825.21	21	<b>Function F User Defined Value</b>  Mission store customizable user defined commands.	Unsigned 2	None	No Restrictions
1825.22	22	<b>Growth Provision Function G</b>  Mission store customizable user defined commands.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1825.23	23	<b>Function G User Defined Value</b>  Mission store customizable user defined commands.	Unsigned 2	None	No Restrictions
1825.24	24	<b>Growth Provision Function H</b>  Mission store customizable user defined commands.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1825.25	25	<b>Function H User Defined Value</b>  Mission store customizable user defined commands.	Unsigned 2	None	No Restrictions

**Table 4 - 132: Message #1825: Store Growth Provision****4.1.10.27 Message #1826: Modify Weapon Loiter Command**

This message shall modify mission loiter for the weapon [DLI 0560]. If the triplet (Hardpoint ID, Carriage ID, and Store ID) is set to no selection (0, 0, 0), then the Weapon Package ID and Weapon Package Firing Order are used to select the store.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1826.01	1	Time Stamp	Double	s	Refer to Section 1.7.2
1826.02	2	Vehicle ID	Integer 4	None	Refer to Section 1.7.5
1826.03	3	CUCS ID	Integer 4	None	Refer to Section 1.7.5
1826.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1826.05	5	Hardpoint ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Hdp #1 0x00000002 = Hdp #2 0x00000004 = Hdp #3 0x00000008 = Hdp #4 0x00000010 = Hdp #5 0x00000020 = Hdp #6 0x00000040 = Hdp #7 0x00000080 = Hdp #8 0x00000100 = Hdp #9 0x00000200 = Hdp #10 0x00000400 = Hdp #11 0x00000800 = Hdp #12 0x00001000 = Hdp #13 0x00002000 = Hdp #14 0x00004000 = Hdp #15 0x00008000 = Hdp #16 0x00010000 = Hdp #17 0x00020000 = Hdp #18 0x00040000 = Hdp #19 0x00080000 = Hdp #20 0x00100000 = Hdp #21 0x00200000 = Hdp #22 0x00400000 = Hdp #23 0x00800000 = Hdp #24 0x01000000 = Hdp #25 0x02000000 = Hdp #26 0x04000000 = Hdp #27 0x08000000 = Hdp #28 0x10000000 = Hdp #29 0x20000000 = Hdp #30 0x40000000 = Hdp #31 0x80000000 = Hdp #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1826.06	6	Carriage ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Crg #1 0x00000002 = Crg #2 0x00000004 = Crg #3 0x00000008 = Crg #4 0x00000010 = Crg #5 0x00000020 = Crg #6 0x00000040 = Crg #7 0x00000080 = Crg #8 0x00000100 = Crg #9 0x00000200 = Crg #10 0x00000400 = Crg #11 0x00000800 = Crg #12 0x00001000 = Crg #13 0x00002000 = Crg #14 0x00004000 = Crg #15 0x00008000 = Crg #16 0x00010000 = Crg #17 0x00020000 = Crg #18 0x00040000 = Crg #19 0x00080000 = Crg #20 0x00100000 = Crg #21 0x00200000 = Crg #22 0x00400000 = Crg #23 0x00800000 = Crg #24 0x01000000 = Crg #25 0x02000000 = Crg #26 0x04000000 = Crg #27 0x08000000 = Crg #28 0x10000000 = Crg #29 0x20000000 = Crg #30 0x40000000 = Crg #31 0x80000000 = Crg #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1826.07	7	<b>Store ID</b>	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Str #1 0x00000002 = Str #2 0x00000004 = Str #3 0x00000008 = Str #4 0x00000010 = Str #5 0x00000020 = Str #6 0x00000040 = Str #7 0x00000080 = Str #8 0x00000100 = Str #9 0x00000200 = Str #10 0x00000400 = Str #11 0x00000800 = Str #12 0x00001000 = Str #13 0x00002000 = Str #14 0x00004000 = Str #15 0x00008000 = Str #16 0x00010000 = Str #17 0x00020000 = Str #18 0x00040000 = Str #19 0x00080000 = Str #20 0x00100000 = Str #21 0x00200000 = Str #22 0x00400000 = Str #23 0x00800000 = Str #24 0x01000000 = Str #25 0x02000000 = Str #26 0x04000000 = Str #27 0x08000000 = Str #28 0x10000000 = Str #29 0x20000000 = Str #30 0x40000000 = Str #31 0x80000000 = Str #32
1826.08	8	<b>Weapon Package ID</b>  A value of "255" selects the default weapon package.	Unsigned 1	None	$1 \leq x$
1826.09	9	<b>Weapon Package Firing Order</b>	Unsigned 1	None	$1 \leq x$
1826.10	10	<b>Mission Number</b>	Unsigned 2	None	No Restrictions
1826.11	11	<b>Flight Mode</b>	Unsigned 1	Enumerated	0 = Default 1 = Range On Heading (Fly-to) 2 = Use Ingress True Heading (Point & Shoot) 3 - 255 = Reserved
1826.12	12	<b>Latitude</b>	Double	rad	$-\pi/2 \leq x \leq \pi/2$
1826.13	13	<b>Longitude</b>	Double	rad	$-\pi \leq x \leq \pi$
1826.14	14	<b>Altitude</b>	Double	m	$-500 \leq x \leq 10,000$

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1826.15	15	<b>Heading to Endpoint</b> 1. A zero value for this word specifies store flight from South to North. 2. A 90 degree value for this word specifies store flight from West to East.	Float	rad	$-\pi \leq x \leq \pi$
1826.16	16	<b>Range</b> This word defines the Range to the endpoint location.	Double	m	$10,000 \leq x \leq 185,000$
1826.17	17	<b>Ingress Mach</b>	Float	M	$0.25 \leq x \leq 0.95$
1826.18	18	<b>Ingress Altitude</b>	Double	m	$-500 \leq x \leq 16,777,000.0$
1826.19	19	<b>Ingress True Heading</b> 1. A zero value for this word specifies store flight from South to North. 2. A 90 degree value for this word specifies store flight from West to East.	Float	rad	$-\pi \leq x \leq \pi$
1826.20	20	<b>Ingress Max Commanded Range</b>	Double	m	$0 \leq x \leq 16,777,000.0$
1826.21	21	<b>Ingress Payload Control</b>	Unsigned 1	Enumerated	0 = No Control 1 = Control Setting 1 2 = Control Setting 2 3 = Control Setting 3 4 = Control Setting 4 5 = Control Setting 5 6 = Control Setting 6 7 = Control Setting 7 8 - 255 = Reserved
1826.22	22	<b>Orbit Payload Controls</b>	Unsigned 1	Enumerated	0 = No Control 1 = Control Setting 1 2 = Control Setting 2 3 = Control Setting 3 4 = Control Setting 4 5 = Control Setting 5 6 = Control Setting 6 7 = Control Setting 7 8 - 255 = Reserved
1826.23	23	<b>Payload Control 1</b>	Unsigned 1	Enumerated	0 = No Control 1 = Control Setting 1 2 = Control Setting 2 3 = Control Setting 3 4 - 255 = Reserved
1826.24	24	<b>Payload Control 2</b>	Unsigned 1	Enumerated	0 = No Control 1 = Control Setting 1 2 = Control Setting 2 3 = Control Setting 3 4 - 255 = Reserved

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1826.25	25	Payload Control 3	Unsigned 1	Enumerated	0 = No Control 1 = Control Setting 1 2 = Control Setting 2 3 = Control Setting 3 4 - 255 = Reserved
1826.26	26	Payload Control 4	Unsigned 1	Enumerated	0 = No Control 1 = Control Setting 1 2 = Control Setting 2 3 = Control Setting 3 4 = Control Setting 4 5 = Control Setting 5 6 = Control Setting 6 7 = Control Setting 7 8 = Control Setting 8 9 = Control Setting 9 10 = Control Setting 10 11 = Control Setting 11 12 = Control Setting 12 13 = Control Setting 13 14 = Control Setting 14 15 = Control Setting 15 16 - 255 = Reserved
1826.27	27	Orbit Parameter 1	Unsigned 1	Enumerated	0 = Option A 1 = Option B
1826.28	28	Orbit Parameter 2	Unsigned 1	Enumerated	0 = No Parameter Set 1 = Option A 2 = Option B 3 = Option C 4 = Option D 5 = Option E 6 = Option F 7 = Option G 8 - 255 = Reserved
1826.29	29	Orbit Parameter 3	Unsigned 1	Enumerated	0 = No Parameter Set 1 = Option A 2 = Option B 3 = Option C 4 = Option D 5 = Option E 6 = Option F 7 = Option G 8 - 255 = Reserved
1826.30	30	Orbit Parameter 4	Unsigned 1	Enumerated	0 = No Parameter Set 1 = Option A 2 = Option B 3 = Option C 4 = Option D 5 = Option E 6 = Option F 7 = Option G 8 - 255 = Reserved

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1826.31	31	Terminate Mode	Unsigned 1	Enumerated	0 = No Parameter Set 1 = Option A 2 = Option B 3 = Option C 4 = Option D 5 = Option E 6 = Option F 7 = Option G 8 - 255 = Reserved
1826.32	32	Orbit Altitude	Double	m	-500 ≤ x ≤ 16,777,000.0
1826.33	33	Loiter Time	Double	μs	0 ≤ x ≤ 2,400,000,000.0

**Table 4 - 133: Message #1826: Modify Loiter****4.1.10.28 Message #1827: GeoZone Control**

This message shall perform GeoZone Control [DLI 0561]. If the triplet (Hardpoint ID, Carriage ID, and Store ID) is set to no selection (0, 0, 0), then the Weapon Package ID and Weapon Package Firing Order are used to select the store.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1827.01	1	Time Stamp	Double	s	Refer to Section 1.7.2
1827.02	2	Vehicle ID	Integer 4	None	Refer to Section 1.7.5
1827.03	3	CUCS ID	Integer 4	None	Refer to Section 1.7.5
1827.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1827.05	5	Hardpoint ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Hdp #1 0x00000002 = Hdp #2 0x00000004 = Hdp #3 0x00000008 = Hdp #4 0x00000010 = Hdp #5 0x00000020 = Hdp #6 0x00000040 = Hdp #7 0x00000080 = Hdp #8 0x00000100 = Hdp #9 0x00000200 = Hdp #10 0x00000400 = Hdp #11 0x00000800 = Hdp #12 0x00001000 = Hdp #13 0x00002000 = Hdp #14 0x00004000 = Hdp #15 0x00008000 = Hdp #16 0x00010000 = Hdp #17 0x00020000 = Hdp #18 0x00040000 = Hdp #19 0x00080000 = Hdp #20 0x00100000 = Hdp #21 0x00200000 = Hdp #22 0x00400000 = Hdp #23 0x00800000 = Hdp #24 0x01000000 = Hdp #25 0x02000000 = Hdp #26 0x04000000 = Hdp #27 0x08000000 = Hdp #28 0x10000000 = Hdp #29 0x20000000 = Hdp #30 0x40000000 = Hdp #31 0x80000000 = Hdp #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1827.06	6	Carriage ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Crg #1 0x00000002 = Crg #2 0x00000004 = Crg #3 0x00000008 = Crg #4 0x00000010 = Crg #5 0x00000020 = Crg #6 0x00000040 = Crg #7 0x00000080 = Crg #8 0x00000100 = Crg #9 0x00000200 = Crg #10 0x00000400 = Crg #11 0x00000800 = Crg #12 0x00001000 = Crg #13 0x00002000 = Crg #14 0x00004000 = Crg #15 0x00008000 = Crg #16 0x00010000 = Crg #17 0x00020000 = Crg #18 0x00040000 = Crg #19 0x00080000 = Crg #20 0x00100000 = Crg #21 0x00200000 = Crg #22 0x00400000 = Crg #23 0x00800000 = Crg #24 0x01000000 = Crg #25 0x02000000 = Crg #26 0x04000000 = Crg #27 0x08000000 = Crg #28 0x10000000 = Crg #29 0x20000000 = Crg #30 0x40000000 = Crg #31 0x80000000 = Crg #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1827.07	7	<b>Store ID</b>	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Str #1 0x00000002 = Str #2 0x00000004 = Str #3 0x00000008 = Str #4 0x00000010 = Str #5 0x00000020 = Str #6 0x00000040 = Str #7 0x00000080 = Str #8 0x00000100 = Str #9 0x00000200 = Str #10 0x00000400 = Str #11 0x00000800 = Str #12 0x00001000 = Str #13 0x00002000 = Str #14 0x00004000 = Str #15 0x00008000 = Str #16 0x00010000 = Str #17 0x00020000 = Str #18 0x00040000 = Str #19 0x00080000 = Str #20 0x00100000 = Str #21 0x00200000 = Str #22 0x00400000 = Str #23 0x00800000 = Str #24 0x01000000 = Str #25 0x02000000 = Str #26 0x04000000 = Str #27 0x08000000 = Str #28 0x10000000 = Str #29 0x20000000 = Str #30 0x40000000 = Str #31 0x80000000 = Str #32
1827.08	8	<b>Weapon Package ID</b>  A value of "255" selects the default weapon package.	Unsigned 1	None	1 ≤ x
1827.09	9	<b>Weapon Package Firing Order</b>	Unsigned 1	None	1 ≤ x
1827.10	10	<b>Auto Abort on Zone</b>	Unsigned 1	Enumerated	0 = Default (No Operation) 1 = Abort mission upon entering an enabled exclusion GeoZone 2 - 255 = Reserved
1827.11	11	<b>Disable All GeoZones</b>	Unsigned 1	Enumerated	0 = Default (No Operation) 1 = Disables all exclusion and engagement GeoZones 2 - 255 = Reserved
1827.12	12	<b>Exclusion Zone Overflight Enable</b>	Unsigned 1	Enumerated	0 = Default 1 = Enables flight through but not impact within all enabled exclusion GeoZones 2 - 255 = Reserved

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1827.13	13	<b>Disable All Exclusion Zones</b>	Unsigned 1	Enumerated	0 = Default (No Operation) 1 = Disables all exclusion GeoZones 2 - 255 = Reserved
1827.14	14	<b>Disable All Engagement Zones</b>	Unsigned 1	Enumerated	0 = Default (No Operation) 1 = Disables all engagement GeoZones 2 - 255 = Reserved
1827.15	15	<b>Erase Selected GeoZone</b>	Unsigned 1	Enumerated	0 = Default (No Operation) 1 = Erase the GeoZone specified by GeoZone Reference Number 2 = Erase the GeoZone specified by Grid Label 3 - 255 = Reserved
1827.16	16	<b>Edit Selected GeoZone</b>	Unsigned 1	Enumerated	0 = Default (No Operation) 1 = Replace or add the GeoZone specified by GeoZone Reference Number 2 = Replace or add the GeoZone specified by Grid Label 3 - 255 = Reserved
1827.17	17	<b>Query Selected GeoZone</b>  Specifies the GeoZone data, loaded into mission store memory, that the mission store is to provide in subsequent GeoZone Status message data words.	Unsigned 1	Enumerated	0 = Default (No Operation) 1 = Provide the GeoZone data specified by GeoZone Reference Number in GeoZone Monitor 2 = Provide the GeoZone data specified by Grid Lab: Characters 1-4 in GeoZone Status 3 = Provide GeoZone data in GeoZone Monitor applicable to the first GeoZone Reference Number of the Exclusion GeoZone that is the cause of the GeoZone Violation, if GeoZone Violation Type > 0. 4 - 255 = Reserved
1827.18	18	<b>GeoZone Reference Number</b>  Identifies each GeoZone with a unique reference number.	Unsigned 4	None	No Restrictions
1827.19	19	<b>Grid Label</b>	Character 5	None	No Restrictions
1827.20	20	<b>Point Type</b>	Unsigned 1	None	No Restrictions
1827.21	21	<b>Point Amplification</b>	Unsigned 1	None	No Restrictions

Unique ID	Field	Data Element Name & Description	Type	Units	Range												
1827.22	22	<b>Point/Line/Area Continuation</b>	Unsigned 1	Enumerated	0 = Default (No Operation) 1 = Indicates that the line/area data in the current GeoZone control message is a continuation of the line/area data defined in the previous GeoZone Control message(s)												
1827.23	23	<b>Point/Line/Area Descriptor</b>  Defines whether the GeoZone Control/Status message contains a point, single point area, a multi-point line or multi-point area.	Unsigned 1	Enumerated	0 = Point 1 = Control Setting 1 2 = Control Setting 2 3 = Control Setting 3 4 - 255 = Reserved												
1827.24	24	<b>Square/Circle Switch</b>  if the GeoZone is not a grid and is set to a single Point Area, the this word defines whether the GeoZone is a square/rectangle or circle/ellipse.	Unsigned 1	Enumerated	0 = Not Applicable 1 = Square/Rectangle (if Area Major Axis is equal to Area Minor Axis then Single Point Area is a square, else it is a rectangle) 2 = Circle/Ellipse (if Area Major Axis is equal to Area Minor Axis then Single Point Area is a circle, else it is an ellipse) 3 - 255 = Reserved												
1827.25	25	<b>End Point Control</b>  Defines whether Point 1 or Point 2 or neither is an endpoint.	Unsigned 1	Enumerated	0 = No End Points 1 = Point 1 is an Endpoint 2 = Point 2 is an Endpoint 3 - 255 = Reserved												
1827.26	26	<b>GeoZone Grid Switch</b>  Defines if the GeoZone referenced by this message is a grid or not.	Unsigned 1	Enumerated	0 = Default (not a grid) 1 = GeoZone is a grid 2 - 255 = Reserved												
1827.27	27	<b>Grid Scale</b>  Defines the grid size for the GeoZone. Grid dimensions are in minutes.  <table border="1"> <tr> <th>Grid</th> <th>Cell Size</th> <th>Sector Size</th> <th>Quad Size</th> </tr> <tr> <td>Type 1</td> <td>30x30</td> <td>10x10</td> <td>5x5</td> </tr> <tr> <td>Type 2</td> <td>60x60</td> <td>20x20</td> <td>10x10</td> </tr> </table>	Grid	Cell Size	Sector Size	Quad Size	Type 1	30x30	10x10	5x5	Type 2	60x60	20x20	10x10	Unsigned 1	Enumerated	0 = Type 1 Grid 1 = Type 2 Grid 2 - 255 = Reserved
Grid	Cell Size	Sector Size	Quad Size														
Type 1	30x30	10x10	5x5														
Type 2	60x60	20x20	10x10														

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1827.28	28	<b>Time Function</b>  Describes how the time in Hour and Minute words are used in the current GeoZone message. Times are referenced to 0000 hours GMT, except for moving GeoZones, where the reference time specifies the time when the moving GeoZone was at the geographic location specified by Reference Point Location (Unique IDs #1827.31-1827.33).	Unsigned 1	Enumerated	0 = Default (Time parameters are not used) 1 = Activation Time 2 = Deactivation Time 3 = Arrival Time 4 = Departure Time 5 = Time Point Established 6 = Non-Operational Time 7 = Operational Time 8 - 255 = Reserved
1827.29	29	<b>Hour</b>	Unsigned 1	h	$x \leq 23$ (Legal Values) $24 \leq x$ (Illegal Values)
1827.30	30	<b>Minute</b>	Unsigned 1	min	$x \leq 59$ (Legal Values) $60 \leq x$ (Illegal Values)
1827.31	31	<b>Reference Point Latitude</b>	Double	rad	$-\pi/2 \leq x \leq \pi/2$
1827.32	32	<b>Reference Point Longitude</b>	Double	rad	$-\pi \leq x \leq \pi$
1827.33	33	<b>Reference Point Altitude</b>	Double	m	$-16,777,000.0 \leq x \leq 16,777,000.0$
1827.34	34	<b>Zone Maximum Altitude</b>  The maximum altitude of the top of the GeoZone.	Double	m	$-16,777,000.0 \leq x \leq 16,777,000.0$
1827.35	35	<b>GeoZone Velocity North</b>  Defines the North component of the velocity of a moving GeoZone. Referenced to True North.	Double	m/s	$x = 0$ (No movement) $0 < x$ (if traveling from south to north) $x < 0$ (if traveling from north to south)
1827.36	36	<b>GeoZone Velocity East</b>  Defines the East component of the velocity of a moving GeoZone. Referenced to True East.	Double	m/s	$x = 0$ (No movement) $0 < x$ (if traveling from west to east) $x < 0$ (if traveling from east to west)
1827.37	37	<b>Area Axis Orientation</b>  Orientation of the Area Major Axis with respect to True North.	Double	rad	$-\pi \leq x \leq \pi$
1827.38	38	<b>Area Major Axis</b>  GeoZone major axis length.	Double	m	$-16,383 \leq x \leq 16,383$
1827.39	39	<b>Area Minor Axis</b>  GeoZone minor axis length.	Double	m	$-16,383 \leq x \leq 16,383$
1827.40	40	<b>Point 1 Offset North</b>  Offset to Reference Point Latitude (Unique ID #1827.31).	Double	m	$-16,383 \leq x \leq 16,383$

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1827.41	41	<b>Point 1 Offset East</b> Offset to Reference Point Longitude (Unique ID #1827.32).	Double	m	-16,383 ≤ x ≤ 16,383
1827.42	42	<b>Point 1 Offset Down</b> Offset to Reference Point Altitude (Unique ID #1827.33).	Double	m	-16,383 ≤ x ≤ 16,383
1827.43	43	<b>Point 2 Offset North</b> Offset to Reference Point Latitude (Unique ID #1827.31).	Double	m	-16,383 ≤ x ≤ 16,383
1827.44	44	<b>Point 2 Offset East</b> Offset to Reference Point Longitude (Unique ID #1827.32).	Double	m	-16,383 ≤ x ≤ 16,383
1827.45	45	<b>Point 2 Offset Down</b> Offset to Reference Point Altitude (Unique ID #1827.33).	Double	m	-16,383 ≤ x ≤ 16,383

**Table 4 - 134: Message #1827: GeoZone Control****4.1.10.29 Message #1830: CUCS Load Out Configuration Response**

This message shall acknowledge receipt of the Load Out Configuration as well as confirm its validity [DLI 0562]. It is used by the CUCS during the discovery and configuration process. This file name is used by the CUCS to fetch weapon load out information.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1830.01	1	<b>Time Stamp</b>	Double	s	Refer to Section 1.7.2
1830.02	2	<b>Vehicle ID</b>	Integer 4	None	Refer to Section 1.7.5
1830.03	3	<b>CUCS ID</b>	Integer 4	None	Refer to Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1830.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
1830.05	5	Load Out Validity	Unsigned 1	Enumerated	0 = False 1 = True
1830.06	6	Load Out ID	Character 128	None	No Restrictions

**Table 4 - 135: Message #1830: CUCS Load Out Configuration Response****4.1.10.30 Message #1831: LAR Planning Request**

1. This message shall be used by the CUCS to provide the Target Location, Ingress Point (IP) location, and the bearing (with respect to True North) from the IP to the Weapons Release Point (WRP, as currently CUCS does not determine if IP-WRP-EFP form a straight line) in order that the UA can take this information and report back the LAR pattern for these points for the selected weapon (station) [DLI 0563]. The purpose of this message is to allow for the displayed of the LAR with respect to the selected target location, weapon, and attack route parameters while planning an attack route.

2. The Weapons Release Point location is provided for the future capability to allow the UA to determine if the WRP is within the LAR.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1831.01	1	Time Stamp	Double	s	Refer to Section 1.7.2
1831.02	2	Vehicle ID	Integer 4	None	Refer to Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1831.03	3	<b>CUCS ID</b>	Integer 4	None	Refer to Section 1.7.5
1831.04	4	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
1831.05	5	<b>Mission Target Location - Latitude</b>	Double	rad	$-\pi/2 \leq x \leq \pi/2$
1831.06	6	<b>Mission Target Location - Longitude</b>	Double	rad	$-\pi \leq x \leq \pi$
1831.07	7	<b>Mission Target Location - Altitude</b>	Float	m	$-1,000 \leq x \leq 100,000$
1831.08	8	<b>Mission Target Location - Altitude Type</b>	Unsigned 1	Enumerated	0 = Pressure Altitude 1 = Baro Altitude 2 = AGL 3 = WGS-84
1831.09	9	<b>IP - Latitude</b>	Double	rad	$-\pi/2 \leq x \leq \pi/2$
1831.10	10	<b>IP - Longitude</b>	Double	rad	$-\pi \leq x \leq \pi$
1831.11	11	<b>IP - Altitude</b>	Float	m	$-1,000 \leq x \leq 100,000$
1831.12	12	<b>IP - Altitude Type</b>	Unsigned 1	Enumerated	0 = Pressure Altitude 1 = Baro Altitude 2 = AGL 3 = WGS-84
1831.13	13	<b>WRP - Latitude</b>	Double	rad	$-\pi/2 \leq x \leq \pi/2$
1831.14	14	<b>WRP - Longitude</b>	Double	rad	$-\pi \leq x \leq \pi$
1831.15	15	<b>WRP - Altitude</b>	Float	m	$-1,000 \leq x \leq 100,000$

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1831.16	16	WRP - Altitude Type	Unsigned 1	Enumerated	0 = Pressure Altitude 1 = Baro Altitude 2 = AGL 3 = WGS-84
1831.17	17	Bearing to WRP	Double	rad	$-\pi \leq x \leq \pi$

**Table 4 - 136: Message #1831: LAR Planning Request****4.1.10.31 Message #1900: SMS Primary Status**

This message shall report SMS primary status conditions [DLI 0564]. This message is sent from the UA and can be transmitted periodically or asynchronously as a response to a command or query issued by the CUCS. SMS Primary Status responds to the following messages:

- Transfer Configuration Data File (#1801)
- Build Store Inventory (#1802)
- Primary Store Control (#1803)
- Abort Release/Launch (#1804)
- Master Arm Control (#1806)
- Select Weapon Package (#1807)
- Prepare For Recovery (#1809)

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1900.01	1	Time Stamp	Double	s	Refer to Section 1.7.2
1900.02	2	Vehicle ID	Integer 4	None	Refer to Section 1.7.5
1900.03	3	CUCS ID	Integer 4	None	Refer to Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1900.04	4	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
1900.05	5	<b>SMS Mode</b>	Unsigned 1	Enumerated	0 = Init 1 = Op_Gnd 2 = Op_Air1 3 = Op_Air2 4 = Op_Armed 5 - 15 = Reserved 16 - 255 = Weapon Specific
1900.06	6	<b>Master Arm Status</b>	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled 2 - 15 = Reserved 16 - 255 = Weapon Specific
1900.07	7	<b>Inventory Status</b>	Unsigned 1	Enumerated	0 = Undetermined 1 = Mismatched 2 = Valid 3 - 15 = Reserved 16 - 255 = Weapon Specific
1900.08	8	<b>Selected Weapon Package</b> Unique ID	Unsigned 1	None	No Restrictions
1900.09	9	<b>SMS Release Ready Status</b>	Unsigned 1	Enumerated	0 = Not Ready 1 = Ready 2 - 255 = Reserved
1900.10	10	<b>In Air Status</b>	Unsigned 1	Enumerated	0 = Not In Air 1 = Air 2 - 255 = Reserved

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1900.11	11	<b>Navigation WILI Status</b>	Unsigned 1	Enumerated	0 = WILI's Invalid 1 = WILI's Valid 2 - 255 = Reserved
1900.12	12	<b>Air Vehicle WILI Status</b>	Unsigned 1	Enumerated	0 = WILI's Invalid 1 = WILI's Valid 2 - 255 = Reserved

**Table 4 - 137: Message #1900: SMS Status****4.1.10.32 Message #1901: Inventory Status Response**

This message is transmitted directly based on a specific query or as a consequence of behavior-based sequencing. This message shall indicate the number of Store Inventory Status Messages that are to follow [DLI 0565]. These child messages are keyed by the data element Inventory Request ID. The following messages trigger an Inventory Status Response Message:

- Store Inventory Status Request (#1814)

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1901.01	1	<b>Time Stamp</b>	Double	s	Refer to Section 1.7.2
1901.02	2	<b>Vehicle ID</b>	Integer 4	None	Refer to Section 1.7.5
1901.03	3	<b>CUCS ID</b>	Integer 4	None	Refer to Section 1.7.5
1901.04	4	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1901.05	5	<b>Inventory Request ID</b> Unique Identifier for the resulting sequence of messages (#1902). Unique for the mission.	Unsigned 1	None	1 ≤ x
1901.06	6	<b>Number of Stores</b>	Unsigned 1	None	No Restrictions

**Table 4 - 138: Message #1901: Store Specific Information Response****4.1.10.33 Message #1902: Store Inventory Status**

This message is transmitted to the CUCS under the same conditions as the Store Specific Information Response. As a result of the contents of the associated Store Specific Information Response (Field 1901.05), Store Inventory Status Messages shall be sent, each representing the status of a single store and keyed with the value in Field 1901.04 [DLI 0566]. These messages are always sent with an associated Inventory Status Response Message.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1902.01	1	<b>Time Stamp</b>	Double	s	Refer to Section 1.7.2
1902.02	2	<b>Vehicle ID</b>	Integer 4	None	Refer to Section 1.7.5
1902.03	3	<b>CUCS ID</b>	Integer 4	None	Refer to Section 1.7.5
1902.04	4	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1902.05	5	Hardpoint ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Hdp #1 0x00000002 = Hdp #2 0x00000004 = Hdp #3 0x00000008 = Hdp #4 0x00000010 = Hdp #5 0x00000020 = Hdp #6 0x00000040 = Hdp #7 0x00000080 = Hdp #8 0x00000100 = Hdp #9 0x00000200 = Hdp #10 0x00000400 = Hdp #11 0x00000800 = Hdp #12 0x00001000 = Hdp #13 0x00002000 = Hdp #14 0x00004000 = Hdp #15 0x00008000 = Hdp #16 0x00010000 = Hdp #17 0x00020000 = Hdp #18 0x00040000 = Hdp #19 0x00080000 = Hdp #20 0x00100000 = Hdp #21 0x00200000 = Hdp #22 0x00400000 = Hdp #23 0x00800000 = Hdp #24 0x01000000 = Hdp #25 0x02000000 = Hdp #26 0x04000000 = Hdp #27 0x08000000 = Hdp #28 0x10000000 = Hdp #29 0x20000000 = Hdp #30 0x40000000 = Hdp #31 0x80000000 = Hdp #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1902.06	6	Carriage ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Crg #1 0x00000002 = Crg #2 0x00000004 = Crg #3 0x00000008 = Crg #4 0x00000010 = Crg #5 0x00000020 = Crg #6 0x00000040 = Crg #7 0x00000080 = Crg #8 0x00000100 = Crg #9 0x00000200 = Crg #10 0x00000400 = Crg #11 0x00000800 = Crg #12 0x00001000 = Crg #13 0x00002000 = Crg #14 0x00004000 = Crg #15 0x00008000 = Crg #16 0x00010000 = Crg #17 0x00020000 = Crg #18 0x00040000 = Crg #19 0x00080000 = Crg #20 0x00100000 = Crg #21 0x00200000 = Crg #22 0x00400000 = Crg #23 0x00800000 = Crg #24 0x01000000 = Crg #25 0x02000000 = Crg #26 0x04000000 = Crg #27 0x08000000 = Crg #28 0x10000000 = Crg #29 0x20000000 = Crg #30 0x40000000 = Crg #31 0x80000000 = Crg #32

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1902.07	7	<b>Store ID</b>	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Str #1 0x00000002 = Str #2 0x00000004 = Str #3 0x00000008 = Str #4 0x00000010 = Str #5 0x00000020 = Str #6 0x00000040 = Str #7 0x00000080 = Str #8 0x00000100 = Str #9 0x00000200 = Str #10 0x00000400 = Str #11 0x00000800 = Str #12 0x00001000 = Str #13 0x00002000 = Str #14 0x00004000 = Str #15 0x00008000 = Str #16 0x00010000 = Str #17 0x00020000 = Str #18 0x00040000 = Str #19 0x00080000 = Str #20 0x00100000 = Str #21 0x00200000 = Str #22 0x00400000 = Str #23 0x00800000 = Str #24 0x01000000 = Str #25 0x02000000 = Str #26 0x04000000 = Str #27 0x08000000 = Str #28 0x10000000 = Str #29 0x20000000 = Str #30 0x40000000 = Str #31 0x80000000 = Str #32
1902.08	8	<b>Inventory Request ID</b> Unique ID for each request group.	Unsigned 1	None	$1 \leq x$
1902.09	9	<b>Store Inventory Sequence ID</b> Sequence number for each #1901 instance.	Unsigned 1	None	$1 \leq x$
1902.10	10	<b>Store Type ID</b>	Character 17	None	No Restrictions
1902.11	11	<b>Store Availability</b>	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled 2 - 15 = Reserved 16 - 255 = Weapon Specific

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1902.12	12	<b>Store State</b>	Unsigned 1	Enumerated	0 = Off 1 = Initialization 2 = Ready/Degraded 3 = Ready/All Up Round 4 = Launch 5 = Free Flight 6 = Abort 7 = Miss Fire 8 = Hang Fire 9 = Jettisoned 10 = Stepped Over 11 = No Status Available 12 - 15 = Reserved 16 - 255 = Weapon Specific
1902.13	13	<b>Country Code</b>	Character 4	None	No Restrictions
1902.14	14	<b>Store Type</b> Weapon Specific	Unsigned 2	None	$x \leq 2,047$
1902.15	15	<b>Store Variant</b> Weapon Specific	Unsigned 1	None	$x \leq 31$

**Table 4 - 139: Message #1902: Store Inventory Status****4.1.10.34 Message #1903: Primary Store Status**

This message shall be transmitted in cases where the status of a specific store is required [DLI 0567]. If the triplet (Hardpoint ID, Carriage ID, and Store ID) is set to no selection (0, 0, 0), then the Weapon Package ID and Weapon Package Firing Order are used to select the store. The following messages trigger the transmittal of a Primary Store Status message:

- Primary Store Control (#1803)
- Prepare Store (#1805)
- Weapon Fire Control (#1808)

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1903.01	1	<b>Time Stamp</b>	Double	s	Refer to Section 1.7.2
1903.02	2	<b>Vehicle ID</b>	Integer 4	None	Refer to Section 1.7.5
1903.03	3	<b>CUCS ID</b>	Integer 4	None	Refer to Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1903.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1903.05	5	Hardpoint ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Hdp #1 0x00000002 = Hdp #2 0x00000004 = Hdp #3 0x00000008 = Hdp #4 0x00000010 = Hdp #5 0x00000020 = Hdp #6 0x00000040 = Hdp #7 0x00000080 = Hdp #8 0x00000100 = Hdp #9 0x00000200 = Hdp #10 0x00000400 = Hdp #11 0x00000800 = Hdp #12 0x00001000 = Hdp #13 0x00002000 = Hdp #14 0x00004000 = Hdp #15 0x00008000 = Hdp #16 0x00010000 = Hdp #17 0x00020000 = Hdp #18 0x00040000 = Hdp #19 0x00080000 = Hdp #20 0x00100000 = Hdp #21 0x00200000 = Hdp #22 0x00400000 = Hdp #23 0x00800000 = Hdp #24 0x01000000 = Hdp #25 0x02000000 = Hdp #26 0x04000000 = Hdp #27 0x08000000 = Hdp #28 0x10000000 = Hdp #29 0x20000000 = Hdp #30 0x40000000 = Hdp #31 0x80000000 = Hdp #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1903.06	6	Carriage ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Crg #1 0x00000002 = Crg #2 0x00000004 = Crg #3 0x00000008 = Crg #4 0x00000010 = Crg #5 0x00000020 = Crg #6 0x00000040 = Crg #7 0x00000080 = Crg #8 0x00000100 = Crg #9 0x00000200 = Crg #10 0x00000400 = Crg #11 0x00000800 = Crg #12 0x00001000 = Crg #13 0x00002000 = Crg #14 0x00004000 = Crg #15 0x00008000 = Crg #16 0x00010000 = Crg #17 0x00020000 = Crg #18 0x00040000 = Crg #19 0x00080000 = Crg #20 0x00100000 = Crg #21 0x00200000 = Crg #22 0x00400000 = Crg #23 0x00800000 = Crg #24 0x01000000 = Crg #25 0x02000000 = Crg #26 0x04000000 = Crg #27 0x08000000 = Crg #28 0x10000000 = Crg #29 0x20000000 = Crg #30 0x40000000 = Crg #31 0x80000000 = Crg #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1903.07	7	<b>Store ID</b>	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Str #1 0x00000002 = Str #2 0x00000004 = Str #3 0x00000008 = Str #4 0x00000010 = Str #5 0x00000020 = Str #6 0x00000040 = Str #7 0x00000080 = Str #8 0x00000100 = Str #9 0x00000200 = Str #10 0x00000400 = Str #11 0x00000800 = Str #12 0x00001000 = Str #13 0x00002000 = Str #14 0x00004000 = Str #15 0x00008000 = Str #16 0x00010000 = Str #17 0x00020000 = Str #18 0x00040000 = Str #19 0x00080000 = Str #20 0x00100000 = Str #21 0x00200000 = Str #22 0x00400000 = Str #23 0x00800000 = Str #24 0x01000000 = Str #25 0x02000000 = Str #26 0x04000000 = Str #27 0x08000000 = Str #28 0x10000000 = Str #29 0x20000000 = Str #30 0x40000000 = Str #31 0x80000000 = Str #32
1903.08	8	<b>Weapon Package ID</b>  A value of "255" selects the default weapon package.	Unsigned 1	None	$1 \leq x$
1903.09	9	<b>Weapon Package Firing Order</b>	Unsigned 1	None	$1 \leq x$
1903.10	10	<b>Transfer Alignment Good</b>	Unsigned 1	Enumerated	0 = False 1 = True 2 - 15 = Reserved 16 - 255 = Weapon Specific
1903.11	11	<b>Transfer Alignment Quality</b>  Scalar quality (1 = best & 10 = worst).	Unsigned 1	None	$1 \leq x \leq 10$
1903.12	12	<b>Store Availability</b>	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled 2 - 15 = Reserved 16 - 255 = Weapon Specific

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1903.13	13	<b>Store State</b>	Unsigned 1	Enumerated	0 = Off 1 = Initialization 2 = Ready/Degraded 3 = Ready/All Up Round 4 = Launch 5 = Free Flight 6 = Abort 7 = Miss Fire 8 = Hang Fire 9 = Jettisoned 10 = Stepped Over 11 = No Status Available 12 - 15 = Reserved 16 - 255 = Weapon Specific
1903.14	14	<b>Store BIT Status</b>	Unsigned 1	Enumerated	0 = Fail 1 = Pass 2 = Unknown 3 - 255 = Weapon Specific
1903.15	15	<b>Store in Initiated BIT</b>	Unsigned 1	Enumerated	0 = False 1 = True
1903.16	16	<b>Critical Hardware Passed</b>  Indicates that all critical hardware subsystems have passed BIT.	Unsigned 1	Enumerated	0 = False 1 = True
1903.17	17	<b>Erase Command/Authority Status</b>  Status of the command sent in Unique ID #1803.13 to erase certain areas of memory.	Unsigned 1	Enumerated	0 = Not Erasing 1 = Erasing Mission Data 2 = Zeroizing GPS Crypto Data 3 = Erasing Store OFP 4 = Erasing All GeoZone Data 5 = Mission Data Erased 6 = GPS Crypto Data Zeroized 7 = Store OFP Erased 8 = All GeoZone Data Erased 9 - 255 = Weapon-Specific
1903.18	18	<b>Nav Solution Quality</b>  Provides a coarse indication of the mission store navigation solution.	Unsigned 1	Enumerated	0 = Unsatisfactory 1 = Marginal 2 = Good 3 = Unused 4 = Unknown
1903.19	19	<b>Temperature Condition</b>  Temperature status of the mission store.	Unsigned 1	Enumerated	0 = Good 1 = Caution 2 = Warning 3 = Unknown
1903.20	20	<b>Country Code</b>	Character 3	None	No Restrictions
1903.21	21	<b>Store Type</b>  Weapon-specific	Unsigned 2	None	$x \leq 2,047$
1903.22	22	<b>Store Variant</b>  Weapon-specific	Unsigned 1	None	$x \leq 31$
1903.23	23	<b>Store ID Character</b>	Character 17	None	No Restrictions

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1903.24	24	<b>28V DC2 Power Present</b>	Unsigned 1	Enumerated	0 = False 1 = True
1903.25	25	<b>Release Consent Present</b>	Unsigned 1	Enumerated	0 = False 1 = True
1903.26	26	<b>Committed to Store Separation</b>	Unsigned 1	Enumerated	0 = False 1 = True
1903.27	27	<b>Non-Safety Critical Release Functions Activated</b>	Unsigned 1	Enumerated	0 = False 1 = True
1903.28	28	<b>Control Surface Inhibit Status</b>	Unsigned 1	Enumerated	0 = False 1 = True
1903.29	29	<b>Minimum Mission Capable</b>	Unsigned 1	Enumerated	0 = False 1 = True
1903.30	30	<b>Minimum TXA Received</b>	Unsigned 1	Enumerated	0 = False 1 = True
1903.31	31	<b>Minimum MDS Received</b>	Unsigned 1	Enumerated	0 = False 1 = True
1903.32	32	<b>Minimum GPS Data</b>	Unsigned 1	Enumerated	0 = False 1 = True
1903.33	33	<b>Platform ID Received</b>	Unsigned 1	Enumerated	0 = False 1 = True
1903.34	34	<b>Time of Flight</b>  Estimated time it will take the weapon to impact calculated from the current position of the aircraft.	Double	s	No Restrictions

**Table 4 - 140: Message #1903: Primary Store Status****4.1.10.35 Message #1904: Secondary Store Status**

The Primary Store Status message (#1903) shall be transmitted in cases where the status of a specific store is required [DLI 0568]. This message, the Secondary Store Status message, carries information that will be needed at a lower rate than Primary Store Status. If the triplet (Hardpoint ID, Carriage ID, and Store ID) is set to no selection (0, 0, 0), then the Weapon Package ID and Weapon Package Firing Order are used to select the store. The following messages trigger the transmittal of a Store Status message:

- Secondary Store Control (#1824)

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1904.01	1	<b>Time Stamp</b>	Double	s	Refer to Section 1.7.2
1904.02	2	<b>Vehicle ID</b>	Integer 4	None	Refer to Section 1.7.5
1904.03	3	<b>CUCS ID</b>	Integer 4	None	Refer to Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1904.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1904.05	5	Hardpoint ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Hdp #1 0x00000002 = Hdp #2 0x00000004 = Hdp #3 0x00000008 = Hdp #4 0x00000010 = Hdp #5 0x00000020 = Hdp #6 0x00000040 = Hdp #7 0x00000080 = Hdp #8 0x00000100 = Hdp #9 0x00000200 = Hdp #10 0x00000400 = Hdp #11 0x00000800 = Hdp #12 0x00001000 = Hdp #13 0x00002000 = Hdp #14 0x00004000 = Hdp #15 0x00008000 = Hdp #16 0x00010000 = Hdp #17 0x00020000 = Hdp #18 0x00040000 = Hdp #19 0x00080000 = Hdp #20 0x00100000 = Hdp #21 0x00200000 = Hdp #22 0x00400000 = Hdp #23 0x00800000 = Hdp #24 0x01000000 = Hdp #25 0x02000000 = Hdp #26 0x04000000 = Hdp #27 0x08000000 = Hdp #28 0x10000000 = Hdp #29 0x20000000 = Hdp #30 0x40000000 = Hdp #31 0x80000000 = Hdp #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1904.06	6	Carriage ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Crg #1 0x00000002 = Crg #2 0x00000004 = Crg #3 0x00000008 = Crg #4 0x00000010 = Crg #5 0x00000020 = Crg #6 0x00000040 = Crg #7 0x00000080 = Crg #8 0x00000100 = Crg #9 0x00000200 = Crg #10 0x00000400 = Crg #11 0x00000800 = Crg #12 0x00001000 = Crg #13 0x00002000 = Crg #14 0x00004000 = Crg #15 0x00008000 = Crg #16 0x00010000 = Crg #17 0x00020000 = Crg #18 0x00040000 = Crg #19 0x00080000 = Crg #20 0x00100000 = Crg #21 0x00200000 = Crg #22 0x00400000 = Crg #23 0x00800000 = Crg #24 0x01000000 = Crg #25 0x02000000 = Crg #26 0x04000000 = Crg #27 0x08000000 = Crg #28 0x10000000 = Crg #29 0x20000000 = Crg #30 0x40000000 = Crg #31 0x80000000 = Crg #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1904.07	7	<b>Store ID</b>	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Str #1 0x00000002 = Str #2 0x00000004 = Str #3 0x00000008 = Str #4 0x00000010 = Str #5 0x00000020 = Str #6 0x00000040 = Str #7 0x00000080 = Str #8 0x00000100 = Str #9 0x00000200 = Str #10 0x00000400 = Str #11 0x00000800 = Str #12 0x00001000 = Str #13 0x00002000 = Str #14 0x00004000 = Str #15 0x00008000 = Str #16 0x00010000 = Str #17 0x00020000 = Str #18 0x00040000 = Str #19 0x00080000 = Str #20 0x00100000 = Str #21 0x00200000 = Str #22 0x00400000 = Str #23 0x00800000 = Str #24 0x01000000 = Str #25 0x02000000 = Str #26 0x04000000 = Str #27 0x08000000 = Str #28 0x10000000 = Str #29 0x20000000 = Str #30 0x40000000 = Str #31 0x80000000 = Str #32
1904.08	8	<b>Weapon Package ID</b>  A value of "255" selects the default weapon package.	Unsigned 1	None	1 ≤ x
1904.09	9	<b>Weapon Package Firing Order</b>	Unsigned 1	None	1 ≤ x
1904.10	10	<b>Erase Status</b>  Erase sensitive data status.	Unsigned 1	Enumerated	0 = Nothing Erased 1 = Erasing Mission Data 2 = Zeroizing GPS Crypto Data 3 = Erasing Store OFP 4 = Erasing all GeoZone Data 5 = Mission Data Erased 6 = GPS Crypto Data Zeroized 7 = Store OFP Erased 8 = GeoZone Data Erased 9 - 255 = Weapon Specific
1904.11	11	<b>Satellites In Track</b>	Unsigned 1	Enumerated	0 = Num Sats < or equal to 3 1 = Num Sats > or equal to 4 2 - 15 = Reserved 16 - 255 = Weapon Specific

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1904.12	12	<b>Flight Termination System Onboard</b>  Indicates that a flight termination system is onboard the mission store.	Unsigned 1	Enumerated	0 = False 1 = True
1904.13	13	<b>TM Status</b>	Unsigned 1	Enumerated	0 = Not Present 1 = Present OFF 2 = Present ON
1904.14	14	<b>Programmable Fuze Onboard</b>  Indicates that the mission store has a programmable fuze on board.	Unsigned 1	Enumerated	0 = False 1 = True
1904.15	15	<b>Jammer Onboard</b>  Indicates that the mission store has a jammer on board.	Unsigned 1	Enumerated	0 = False 1 = True
1904.16	16	<b>Mission Mismatch</b>  Storage location for mission data is not compatible with store location.	Unsigned 1	Enumerated	0 = False 1 = True
1904.17	17	<b>Jammer Required</b>  Notify the platform that a jammer is required to complete the selected primary mission.	Unsigned 1	Enumerated	0 = False 1 = True
1904.18	18	<b>Programmable Retard Device Onboard</b>  Informs the operator of the presence or absence of a programmable retard device for the given store.	Unsigned 1	Enumerated	0 = Disabled, no Programmable Retard Device 1 = Enabled, Programmable Retard Device
1904.19	19	<b>Data Recorder Onboard</b>  Indicates that a data recorder is onboard the mission store.	Unsigned 1	Enumerated	0 = False 1 = True
1904.20	20	<b>GPS Capable</b>  Indicates that the mission store is GPS capable.	Unsigned 1	Enumerated	0 = False 1 = True
1904.21	21	<b>Anti-Jam Capable</b>  Indicates that a seeker is onboard.	Unsigned 1	Enumerated	0 = False 1 = True
1904.22	22	<b>Seeker Onboard</b>  Indicates that a seeker is onboard.	Unsigned 1	Enumerated	0 = False 1 = True
1904.23	23	<b>Primary Mission Numeric Storage Location</b>  Used to notify the platform of the selected MDS.	Unsigned 2	None	No Restrictions

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1904.24	24	<b>Fuze Type</b> Mission store fuze ID code.	Unsigned 2	None	x ≤ 2,047
1904.25	25	<b>Fuze Variant</b> Mission store fuze variant.	Unsigned 1	None	x ≤ 31
1904.26	26	<b>Seeker/Sensor Type</b> Mission store seeker/sensor ID code.	Unsigned 2	None	x ≤ 2,047
1904.27	27	<b>Seeker/Sensor Variant</b> Mission store seeker/sensor variant.	Unsigned 1	None	x ≤ 31
1904.28	28	<b>BIT Subsystem A</b>	Unsigned 1	Enumerated	0 = Fail 1 = Pass 2 = N/A
1904.29	29	<b>BIT Subsystem B</b>	Unsigned 1	Enumerated	0 = Fail 1 = Pass 2 = N/A
1904.30	30	<b>BIT Subsystem C</b>	Unsigned 1	Enumerated	0 = Fail 1 = Pass 2 = N/A
1904.31	31	<b>BIT Subsystem D</b>	Unsigned 1	Enumerated	0 = Fail 1 = Pass 2 = N/A
1904.32	32	<b>BIT Subsystem E</b>	Unsigned 1	Enumerated	0 = Fail 1 = Pass 2 = N/A
1904.33	33	<b>BIT Subsystem F</b>	Unsigned 1	Enumerated	0 = Fail 1 = Pass 2 = N/A
1904.34	34	<b>BIT Subsystem G</b>	Unsigned 1	Enumerated	0 = Fail 1 = Pass 2 = N/A
1904.35	35	<b>BIT Subsystem H</b>	Unsigned 1	Enumerated	0 = Fail 1 = Pass 2 = N/A
1904.36	36	<b>BIT Subsystem I</b>	Unsigned 1	Enumerated	0 = Fail 1 = Pass 2 = N/A
1904.37	37	<b>BIT Subsystem J</b>	Unsigned 1	Enumerated	0 = Fail 1 = Pass 2 = N/A
1904.38	38	<b>BIT Subsystem K</b>	Unsigned 1	Enumerated	0 = Fail 1 = Pass 2 = N/A
1904.39	39	<b>BIT Subsystem L</b>	Unsigned 1	Enumerated	0 = Fail 1 = Pass 2 = N/A
1904.40	40	<b>BIT Subsystem M</b>	Unsigned 1	Enumerated	0 = Fail 1 = Pass 2 = N/A

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1904.41	41	<b>BIT Subsystem N</b>	Unsigned 1	Enumerated	0 = Fail 1 = Pass 2 = N/A
1904.42	42	<b>BIT Subsystem O</b>	Unsigned 1	Enumerated	0 = Fail 1 = Pass 2 = N/A
1904.43	43	<b>BIT Subsystem P</b>	Unsigned 1	Enumerated	0 = Fail 1 = Pass 2 = N/A
1904.44	44	<b>Key Coverage</b>	Unsigned 1	None	$x \leq 56$
1904.45	45	<b>GPS Active Cryptonet</b>  Notify the platform of the GPS crypto net that is being used by a SAASM equipped store.	Unsigned 2	None	No Restrictions
1904.46	46	<b>TM/FTS Batteries Activated</b>	Unsigned 1	Enumerated	0 = False 1 = True
1904.47	47	<b>Master Mode Control Status</b>	Unsigned 1	Enumerated	0 = None 1 = Reserved 2 = Option A 3 = Option B 4 = Option C 5 = Option D 6 = Option E 7 = Option F 8 = Option G 9 = Option H 10 = Option I 11 = Option J 12 = Option K 13 = Option L 14 = Option M 15 = Option N
1904.48	48	<b>Last BIT Passed</b>	Unsigned 1	Enumerated	0 = False 1 = True
1904.49	49	<b>Conditioning Complete</b>	Unsigned 1	Enumerated	0 = False 1 = True
1904.50	50	<b>Secondary MDS Received</b>	Unsigned 1	Enumerated	0 = False 1 = True
1904.51	51	<b>Mission Data Stored</b>	Unsigned 1	Enumerated	0 = False 1 = True

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1904.52	52	<b>Mission Data Set X Valid</b>	Unsigned 2	Bitmapped	0x0000 = No MDS Valid 0x0001 = MDS1 Valid 0x0002 = MDS2 Valid 0x0004 = MDS3 Valid 0x0008 = MDS4 Valid 0x0010 = MDS5 Valid 0x0020 = MDS6 Valid 0x0040 = MDS7 Valid 0x0080 = MDS8 Valid 0x0100 = MDS9 Valid 0x0200 = Reserved1 0x0400 = Reserved2 0x0800 = Reserved3 0x1000 = Reserved4 0x2000 = Reserved5 0x4000 = Reserved6 0x8000 = Reserved7
1904.53	53	<b>MDS in Modify Mission Storage Location Valid</b>	Unsigned 1	Enumerated	0 = False 1 = True
1904.54	54	<b>In Simulated Release</b>	Unsigned 1	Enumerated	0 = False 1 = True
1904.55	55	<b>In Immediate Sim Flight</b>	Unsigned 1	Enumerated	0 = False 1 = True
1904.56	56	<b>In Timeline Integration</b>	Unsigned 1	Enumerated	0 = False 1 = True
1904.57	57	<b>Over Temp Caution</b>	Unsigned 1	Enumerated	0 = False 1 = True
1904.58	58	<b>Over Temp Warning</b>	Unsigned 1	Enumerated	0 = False 1 = True
1904.59	59	<b>MDT Data Received</b>	Unsigned 1	Bitmapped	0x00 = No MDT Data 0x01 = Almanac 0x02 = Ephemeris 0x04 = AS/SV 0x08 = GeoZone 0x10 = Reserved2 0x20 = Other Store Keys 0x40 = Reserved1 0x80 = Growth Crypto
1904.60	60	<b>GPS Keys Received</b>	Unsigned 1	Enumerated	0 = False 1 = True
1904.61	61	<b>Time Received</b>	Unsigned 1	Enumerated	0 = False 1 = True
1904.62	62	<b>CNM Received</b>	Unsigned 1	Enumerated	0 = False 1 = True

**Table 4 - 141: Message #1904: Secondary Store Status**

#### 4.1.10.36 Message #1905: Weapon Package Status Response

This message is designed similar to the Inventory Status Response (#1901). This message shall be sent as a precursor to a number of keyed child messages [DLI 0569]. This message is triggered by the receipt of Select Weapon Package (#1807).

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1905.01	1	Time Stamp	Double	s	Refer to Section 1.7.2
1905.02	2	Vehicle ID	Integer 4	None	Refer to Section 1.7.5
1905.03	3	CUCS ID	Integer 4	None	Refer to Section 1.7.5
1905.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
1905.05	5	<b>Weapon Package Request ID</b>  Unique Identifier for the Weapon Package Request. Unique for the duration of the mission.	Unsigned 1	None	$1 \leq x$
1905.06	6	<b>Weapon Package ID</b>  The unique identifier for this particular weapon package. A value of "255" selects the default weapon package.	Unsigned 1	None	$1 \leq x$
1905.07	7	<b>Number of Weapons In Package</b>	Unsigned 1	None	$x = 0$ (Invalid Weapon Package ID) $1 \leq x$

**Table 4 - 142: Message #1905: Weapon Package Status Response****4.1.10.37 Message #1906: Weapon Package Status**

This message shall map a particular store to a weapons package [DLI 0570]. These messages follow Message #1905 and are part of the same request for information. The implementer should be prepared to receive Message #1905 and the series of Message #1906s in any particular order.

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1906.01	1	<b>Time Stamp</b>	Double	s	Refer to Section 1.7.2
1906.02	2	<b>Vehicle ID</b>	Integer 4	None	Refer to Section 1.7.5
1906.03	3	<b>CUCS ID</b>	Integer 4	None	Refer to Section 1.7.5
1906.04	4	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
1906.05	5	<b>Store Type</b> Weapon-specific	Unsigned 2	None	No Restrictions
1906.06	6	<b>Store Variant</b> Weapon-specific	Unsigned 1	None	No Restrictions
1906.07	7	<b>Store ID Character</b> Weapon-specific	Character 17	None	No Restrictions

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1906.08	8	<b>Weapon Package Request ID</b>  Unique Identifier as described in Unique ID #1904.05.	Unsigned 1	None	$1 \leq x$
1906.09	9	<b>Weapon Package Sequence ID</b>  The sequence identifier that denotes the reference store type as the nth store type in the sequence.	Unsigned 1	None	$1 \leq x$
1906.10	10	<b>Weapon Package ID</b>  Unique Identifier as described in Unique ID #1904.06.  A value of "255" selects the default weapon package.	Unsigned 1	None	$1 \leq x$
1906.11	11	<b>Store Quantity</b>  The number of stores in the weapon package that have the same type and variant.	Unsigned 1	None	$1 \leq x$

**Table 4 - 143: Message #1906: Weapon Package Status****4.1.10.38 Message #1907: Seeker Sensor Track Status**

This message shall contain seeker and sensor status information from the store [DLI 0571]. If the triplet (Hardpoint ID, Carriage ID, and Store ID) is set to no selection (0, 0, 0), then the Weapon Package ID and Weapon Package Firing Order are used to select the store.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1907.01	1	<b>Time Stamp</b>	Double	s	Refer to Section 1.7.2
1907.02	2	<b>Vehicle ID</b>	Integer 4	None	Refer to Section 1.7.5
1907.03	3	<b>CUCS ID</b>	Integer 4	None	Refer to Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1907.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1907.05	5	Hardpoint ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Hdp #1 0x00000002 = Hdp #2 0x00000004 = Hdp #3 0x00000008 = Hdp #4 0x00000010 = Hdp #5 0x00000020 = Hdp #6 0x00000040 = Hdp #7 0x00000080 = Hdp #8 0x00000100 = Hdp #9 0x00000200 = Hdp #10 0x00000400 = Hdp #11 0x00000800 = Hdp #12 0x00001000 = Hdp #13 0x00002000 = Hdp #14 0x00004000 = Hdp #15 0x00008000 = Hdp #16 0x00010000 = Hdp #17 0x00020000 = Hdp #18 0x00040000 = Hdp #19 0x00080000 = Hdp #20 0x00100000 = Hdp #21 0x00200000 = Hdp #22 0x00400000 = Hdp #23 0x00800000 = Hdp #24 0x01000000 = Hdp #25 0x02000000 = Hdp #26 0x04000000 = Hdp #27 0x08000000 = Hdp #28 0x10000000 = Hdp #29 0x20000000 = Hdp #30 0x40000000 = Hdp #31 0x80000000 = Hdp #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1907.06	6	Carriage ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Crg #1 0x00000002 = Crg #2 0x00000004 = Crg #3 0x00000008 = Crg #4 0x00000010 = Crg #5 0x00000020 = Crg #6 0x00000040 = Crg #7 0x00000080 = Crg #8 0x00000100 = Crg #9 0x00000200 = Crg #10 0x00000400 = Crg #11 0x00000800 = Crg #12 0x00001000 = Crg #13 0x00002000 = Crg #14 0x00004000 = Crg #15 0x00008000 = Crg #16 0x00010000 = Crg #17 0x00020000 = Crg #18 0x00040000 = Crg #19 0x00080000 = Crg #20 0x00100000 = Crg #21 0x00200000 = Crg #22 0x00400000 = Crg #23 0x00800000 = Crg #24 0x01000000 = Crg #25 0x02000000 = Crg #26 0x04000000 = Crg #27 0x08000000 = Crg #28 0x10000000 = Crg #29 0x20000000 = Crg #30 0x40000000 = Crg #31 0x80000000 = Crg #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1907.07	7	<b>Store ID</b>	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Str #1 0x00000002 = Str #2 0x00000004 = Str #3 0x00000008 = Str #4 0x00000010 = Str #5 0x00000020 = Str #6 0x00000040 = Str #7 0x00000080 = Str #8 0x00000100 = Str #9 0x00000200 = Str #10 0x00000400 = Str #11 0x00000800 = Str #12 0x00001000 = Str #13 0x00002000 = Str #14 0x00004000 = Str #15 0x00008000 = Str #16 0x00010000 = Str #17 0x00020000 = Str #18 0x00040000 = Str #19 0x00080000 = Str #20 0x00100000 = Str #21 0x00200000 = Str #22 0x00400000 = Str #23 0x00800000 = Str #24 0x01000000 = Str #25 0x02000000 = Str #26 0x04000000 = Str #27 0x08000000 = Str #28 0x10000000 = Str #29 0x20000000 = Str #30 0x40000000 = Str #31 0x80000000 = Str #32
1907.08	8	<b>Weapon Package ID</b>  A value of "255" selects the default weapon package.	Unsigned 1	None	1 ≤ x
1907.09	9	<b>Weapon Package Firing Order</b>	Unsigned 1	None	1 ≤ x
1907.10	10	<b>Laser Receiver Tracking</b>	Unsigned 1	Enumerated	0 = False 1 = True 2 = Not Applicable 3 - 15 = Reserved 16 - 255 = Weapon Specific
1907.11	11	<b>Passive Sensor Tracking</b>	Unsigned 1	Enumerated	0 = False 1 = True 2 = Not Applicable 3 - 15 = Reserved 16 - 255 = Weapon Specific
1907.12	12	<b>Active Sensor Tracking</b>	Unsigned 1	Enumerated	0 = False 1 = True 2 = Not Applicable 3 - 15 = Reserved 16 - 255 = Weapon Specific

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1907.13	13	<b>Passive Sensor Onboard</b>	Unsigned 1	Enumerated	0 = False 1 = True 2 - 15 = Reserved 16 - 255 = Weapon Specific
1907.14	14	<b>Active Sensor Onboard</b>	Unsigned 1	Enumerated	0 = False 1 = True 2 - 15 = Reserved 16 - 255 = Weapon Specific
1907.15	15	<b>Laser Receiver Onboard</b>	Unsigned 1	Enumerated	0 = False 1 = True 2 - 15 = Reserved 16 - 255 = Weapon Specific
1907.16	16	<b>Laser Transmitter Onboard</b>	Unsigned 1	Enumerated	0 = False 1 = True 2 - 15 = Reserved 16 - 255 = Weapon Specific

**Table 4 - 144: Message #1907: Seeker Sensor Track Status****4.1.10.39 Message #1908: Seeker Sensor Status**

This message shall contain seeker and sensor status related to pointing of the seeker and sensor and range information [DLI 0572]. If the triplet (Hardpoint ID, Carriage ID, and Store ID) is set to no selection (0, 0, 0), then the Weapon Package ID and Weapon Package Firing Order are used to select the store.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1908.01	1	<b>Time Stamp</b>	Double	s	Refer to Section 1.7.2
1908.02	2	<b>Vehicle ID</b>	Integer 4	None	Refer to Section 1.7.5
1908.03	3	<b>CUCS ID</b>	Integer 4	None	Refer to Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1908.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1908.05	5	Hardpoint ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Hdp #1 0x00000002 = Hdp #2 0x00000004 = Hdp #3 0x00000008 = Hdp #4 0x00000010 = Hdp #5 0x00000020 = Hdp #6 0x00000040 = Hdp #7 0x00000080 = Hdp #8 0x00000100 = Hdp #9 0x00000200 = Hdp #10 0x00000400 = Hdp #11 0x00000800 = Hdp #12 0x00001000 = Hdp #13 0x00002000 = Hdp #14 0x00004000 = Hdp #15 0x00008000 = Hdp #16 0x00010000 = Hdp #17 0x00020000 = Hdp #18 0x00040000 = Hdp #19 0x00080000 = Hdp #20 0x00100000 = Hdp #21 0x00200000 = Hdp #22 0x00400000 = Hdp #23 0x00800000 = Hdp #24 0x01000000 = Hdp #25 0x02000000 = Hdp #26 0x04000000 = Hdp #27 0x08000000 = Hdp #28 0x10000000 = Hdp #29 0x20000000 = Hdp #30 0x40000000 = Hdp #31 0x80000000 = Hdp #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1908.06	6	Carriage ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Crg #1 0x00000002 = Crg #2 0x00000004 = Crg #3 0x00000008 = Crg #4 0x00000010 = Crg #5 0x00000020 = Crg #6 0x00000040 = Crg #7 0x00000080 = Crg #8 0x00000100 = Crg #9 0x00000200 = Crg #10 0x00000400 = Crg #11 0x00000800 = Crg #12 0x00001000 = Crg #13 0x00002000 = Crg #14 0x00004000 = Crg #15 0x00008000 = Crg #16 0x00010000 = Crg #17 0x00020000 = Crg #18 0x00040000 = Crg #19 0x00080000 = Crg #20 0x00100000 = Crg #21 0x00200000 = Crg #22 0x00400000 = Crg #23 0x00800000 = Crg #24 0x01000000 = Crg #25 0x02000000 = Crg #26 0x04000000 = Crg #27 0x08000000 = Crg #28 0x10000000 = Crg #29 0x20000000 = Crg #30 0x40000000 = Crg #31 0x80000000 = Crg #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1908.07	7	<b>Store ID</b>	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Str #1 0x00000002 = Str #2 0x00000004 = Str #3 0x00000008 = Str #4 0x00000010 = Str #5 0x00000020 = Str #6 0x00000040 = Str #7 0x00000080 = Str #8 0x00000100 = Str #9 0x00000200 = Str #10 0x00000400 = Str #11 0x00000800 = Str #12 0x00001000 = Str #13 0x00002000 = Str #14 0x00004000 = Str #15 0x00008000 = Str #16 0x00010000 = Str #17 0x00020000 = Str #18 0x00040000 = Str #19 0x00080000 = Str #20 0x00100000 = Str #21 0x00200000 = Str #22 0x00400000 = Str #23 0x00800000 = Str #24 0x01000000 = Str #25 0x02000000 = Str #26 0x04000000 = Str #27 0x08000000 = Str #28 0x10000000 = Str #29 0x20000000 = Str #30 0x40000000 = Str #31 0x80000000 = Str #32
1908.08	8	<b>Weapon Package ID</b>  A value of "255" selects the default weapon package.	Unsigned 1	None	1 ≤ x
1908.09	9	<b>Weapon Package Firing Order</b>	Unsigned 1	None	1 ≤ x
1908.10	10	<b>Range Status</b>	Unsigned 1	Enumerated	0 = Not Applicable 1 = Measured Range Data 2 = Computed Range Data 3 = Estimated Range Data 4 - 15 = Reserved 16 - 255 = Weapon Specific
1908.11	11	<b>Slew Enable</b>	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled 2 = Not Applicable 3 - 15 = Reserved 16 - 255 = Weapon Specific
1908.12	12	<b>Azimuth Angle</b>  Store Dependent	Float	rad	No Restrictions
1908.13	13	<b>Elevation Angle</b>  Store Dependent	Float	rad	No Restrictions
1908.14	14	<b>Slave Position X - Unit Vector</b>	Float	None	-1 ≤ x ≤ 1

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1908.15	15	<b>Slave Position Y - Unit Vector</b>	Float	None	-1 ≤ x ≤ 1
1908.16	16	<b>Slave Position Z - Unit Vector</b>	Float	None	-1 ≤ x ≤ 1
1908.17	17	<b>Sensor Measured Range</b> Store Dependent	Float	m	No Restrictions
1908.18	18	<b>Sensor Range Rate</b> Store Dependent	Float	m	No Restrictions
1908.19	19	<b>Passive Sensor Azimuth Error</b> Store Dependent	Float	rad	No Restrictions
1908.20	20	<b>Passive Sensor Elevation Error</b> Store Dependent	Float	rad	No Restrictions
1908.21	21	<b>Active Sensor Azimuth Error</b> Store Dependent	Float	rad	No Restrictions
1908.22	22	<b>Active Sensor Elevation Error</b> Store Dependent	Float	rad	No Restrictions
1908.23	23	<b>Azimuth Rate</b> Store Dependent	Float	m/s	No Restrictions
1908.24	24	<b>Elevation Rate</b> Store Dependent	Float	m/s	No Restrictions
1908.25	25	<b>Passive Sensor Control</b>	Unsigned 1	Enumerated	0 = Off 1 = On 2 = On Before and After Launch 3 = On After Launch 4 = Not Applicable 5 - 15 = Reserved 16 - 255 = Weapon Specific
1908.26	26	<b>Active Sensor Control</b>	Unsigned 1	Enumerated	0 = Sensor Off (Default) 1 = Standby 2 = On Before and After Launch 3 = On After Launch Only 4 = Not Applicable 5 - 15 = Reserved 16 - 255 = Weapon Specific
1908.27	27	<b>Lock On Control</b>	Unsigned 1	Enumerated	0 = Disabled 1 = Lock On Before Launch (LOBL) 2 = Lock On After Launch (LOAL) 3 = On After Launch 4 = Not Applicable 5 - 15 = Reserved 16 - 255 = Weapon Specific

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1908.28	28	<b>Trajectory Control</b>	Unsigned 1	Enumerated	0 = Low 1 = High 2 = Direct 3 = Not Applicable 4 - 15 = Reserved 16 - 255 = Weapon Specific
1908.29	29	<b>Target Designate</b>	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled 2 = Not Applicable 3 - 15 = Reserved 16 - 255 = Weapon Specific
1908.30	30	<b>Active Seeker Frequency Enable</b>  Enables the active seeker frequency fields. If enabled, the UA processes fields 26-28. If disabled, the UA ignores Unique ID#s 1908.26-1908.28).	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1908.31	31	<b>Frequency Code Prefix</b>	Character 2	None	No Restrictions
1908.32	32	<b>Frequency Code Suffix</b>	Unsigned 1	None	No Restrictions
1908.33	33	<b>Target Priority Control</b>  Provides the capability to select between preplanned Target Prioritization Lists or an operator entered target priority list loaded in mission store memory.	Unsigned 1	Enumerated	0 = No Target Prioritization List 1 = Operator Entered List 2 - 254 = Preplanned Target List
1908.34	34	<b>Target Priority 1</b>  Operator entered target class (highest priority).	Unsigned 1	Enumerated	0 - 63 = Weapon Specific Target Class
1908.35	35	<b>Target Priority 2</b>  Operator entered target class.	Unsigned 1	Enumerated	0 - 63 = Weapon Specific Target Class
1908.36	36	<b>Target Priority 3</b>  Operator entered target class (lowest priority).	Unsigned 1	Enumerated	0 - 63 = Weapon Specific Target Class
1908.37	37	<b>Abort on Target Priority</b>  Commands a mission store to abort its post-release mission prior to impact.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled 2 = Not Applicable 3 - 15 = Reserved 16 - 255 = Weapon Specific
1908.38	38	<b>Boresight Correction State</b>	Unsigned 1	Enumerated	0 = Not Performed 1 = Performed 2 = Not Applicable 3 - 15 = Reserved 16 - 255 = Weapon Specific

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1908.39	39	<b>Applied Boresight Correction</b>	Unsigned 1	Enumerated	0 = Not Applied 1 = Applied 2 = Not Applicable 3 - 15 = Reserved 16 - 255 = Weapon Specific
1908.40	40	<b>Request ID</b> A mission Unique ID to distinguish one request from another.	Unsigned 2	None	No Restrictions

**Table 4 - 145: Message #1908: Seeker Sensor Status****4.1.10.40 Message #1909: Weapon Launch Decision Aid Region Report**

1. The UA shall use this message to report decision aid regions for use in enhancing the operator's situational awareness in order to successfully employ a specific weapon [DLI 0573]. The current usage can be to display a LAR (Launch Acceptability Region), WFP (Weapon Footprint), Nadir zone, Overshoot area, InZone area and a general area. These areas, as described below, are designed to be generated around one of two reference points: the UA or the Active Target.
2. A LAR is a target-centric area defining the region in space where the UA must be in order to hit a target with a specific weapon and meet all the weapon-specific terminal guidance conditions. The LAR rotates around the target as the UA flight path and heading changes. The LAR is typically used for a preplanned target and with a remote designator.
3. A WFP is a UA-centric region in space where the target must be in order to be hit with a specific weapon and meet all the weapon-specific terminal guidance conditions. The WFP moves in front of the UA as the UA's flight path and heading change. A WFP is typically used for targets of opportunity.
4. Nadir is a region directly below the UA. It has been seen that some weapons will not have the maneuvering capability to engage a target directly below the UA.
5. The Overshoot area is a region where a weapon may overshoot its target because of the particular weapons flight dynamics. Identifying this region provides the operator with the information needed to maneuver the UA into a position that minimizes or eliminates the potential for overshooting a target.
6. In Zone is defined as a region the platform must release the store within in order for it to achieve all mission objectives (i.e., target impact conditions, time on target, waypoints, etc.). A weapon has the best chance to hit its target in this region. Typically, the InZone area is a subset of a LAR or WFP. For example, a weapon may be employed over the entire LAR or WFP, but ideally should be employed in the InZone area. Also, a weapon's InZone area may be equivalent to the LAR or WFP.
7. An enumeration for a general area has also been defined. This is provided to give integrators the flexibility to implement a situational awareness area that has not been specified. Ideally, as such regions are identified and used, they will be included in the "Polygon Type" enumeration.

8. The derivation of these regions varies with UA flight dynamics and a specific weapon performance and guidance options.

9. This message defines a 2D area that is generated by the UA. If the binary value for "Reference point" in the message is 0, then it is assumed that the center point for the shape created by the vectors is the current UA position. If the binary value for "Reference point" is 1, then it is assumed that the center point for the shape created by the vectors is the active target position. This message is variable length. It can specify from 1 to 255 polar coordinates with respect to the reference point. A vector count of zero clears all LAR/WFP points. This message is transmitted from the UA to the CUCS.

10. Message #1909 allows for an angular offset of the polygon from the reference point. An offset radius of 0 (zero) indicates no offset. If offset radius = 0, then the offset angle should be ignored.

11. This message supports multiple polygons to be drawn for each defined "Polygon Type". Each Polygon Type can have from 1 to 255 sub polygons. "Polygon subNumber" defines which polygon is currently handled in the message. A Number of Sub-Polygons of zero clears all points of the specified Polygon Type.

12. Each subPolygon can contain up to 254 vectors. Because of STANAG 4586 message length limitations, only 78 vectors can be handled in any instance of this message. Therefore, this message is designed to support a polygon with greater numbers by sending multiples messages. "Message Vector Number Start" defines the overall position of the first vector carried in the message, and "Message Vector Number Stop" defines the overall position of the last vector carried in the message.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1909.01	1	Time Stamp	Double	s	Refer to Section 1.7.2
1909.02	2	Vehicle ID	Integer 4	None	Refer to Section 1.7.5
1909.03	3	CUCS ID	Integer 4	None	Refer to Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1909.04	4	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
1909.05	5	<b>Polygon Type</b>	Unsigned 1	Enumerated	0 = General Zone 1 = WFP 2 = LAR 3 = Nadir 4 = Overshoot 5 = InZone 6 - 254 = Reserved
1909.06	6	<b>Reference Point</b>	Unsigned 1	Enumerated	1 = UA 2 = Active Target
1909.07	7	<b>Offset Radius</b>  An offset Radius of 0 is used to define no offset. If Radius is 0, angle value is ignored.	Unsigned 4	m	x ≤ 100,000
1909.08	8	<b>Offset Angle</b>	Integer 2	BAM	No Restrictions
1909.09	9	<b>Number of Sub-Polygons</b>	Unsigned 1	None	1 ≤ x
1909.10	10	<b>Polygon SubNumber</b>  Polygon SubNumber =0, clears all vectors of all the subpolygons of the specified Polygon Type.	Unsigned 1	None	x ≤ 254
1909.11	11	<b>Inclusion/Exclusion</b>	Unsigned 1	Enumerated	0 = Inclusion 1 = Exclusion

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1909.12	12	<b>Total SubPolygon Vector Count (radius, angle)</b>  Total subPolygon Vector Count=0, clears the vectors of the subpolygon specified by Polygon subNumber and Polygon Type.	Unsigned 1	None	$x \leq 254$
1909.13	13	<b>Msg Vector Number Start</b>	Unsigned 1	None	$1 \leq x \leq 254$
1909.14	14	<b>Msg Vector Number Stop</b>	Unsigned 1	None	$1 \leq x \leq 254$
<b>Radius and Angle</b> repetition begins (where n = 1 to "Msg Vector Number Stop"- "Msg Vector Number Start"+1) Maximum = 78					
1909.15	-	<b>Radius &lt;n&gt;</b>	Unsigned 4	m	$x \leq 100,000$
1909.16	-	<b>Angle &lt;n&gt;</b>	Integer 2	BAM	No Restrictions
<b>Radius and Angle</b> repetition ends					

**Table 4 - 146: Message #1909: Weapon Launch Decision Aid Region Report****4.1.10.41 Message #1911: Fuze Status**

This message shall communicate fuze status from the UA to the CUCS for the selected weapon [DLI 0574]. It can be called directly as a part of a 1800 message-directed query by the CUCS to the UA or as a response by the UA to the receipt of a Fuze Control (#1810) message. If the triplet (Hardpoint ID, Carriage ID, and Store ID) is set to no selection (0, 0, 0), then the Weapon Package ID and Weapon Package Firing Order is used to select the store.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1911.01	1	<b>Time Stamp</b>	Double	s	Refer to Section 1.7.2
1911.02	2	<b>Vehicle ID</b>	Integer 4	None	Refer to Section 1.7.5
1911.03	3	<b>CUCS ID</b>	Integer 4	None	Refer to Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1911.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1911.05	5	Hardpoint ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Hdp #1 0x00000002 = Hdp #2 0x00000004 = Hdp #3 0x00000008 = Hdp #4 0x00000010 = Hdp #5 0x00000020 = Hdp #6 0x00000040 = Hdp #7 0x00000080 = Hdp #8 0x00000100 = Hdp #9 0x00000200 = Hdp #10 0x00000400 = Hdp #11 0x00000800 = Hdp #12 0x00001000 = Hdp #13 0x00002000 = Hdp #14 0x00004000 = Hdp #15 0x00008000 = Hdp #16 0x00010000 = Hdp #17 0x00020000 = Hdp #18 0x00040000 = Hdp #19 0x00080000 = Hdp #20 0x00100000 = Hdp #21 0x00200000 = Hdp #22 0x00400000 = Hdp #23 0x00800000 = Hdp #24 0x01000000 = Hdp #25 0x02000000 = Hdp #26 0x04000000 = Hdp #27 0x08000000 = Hdp #28 0x10000000 = Hdp #29 0x20000000 = Hdp #30 0x40000000 = Hdp #31 0x80000000 = Hdp #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1911.06	6	Carriage ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Crg #1 0x00000002 = Crg #2 0x00000004 = Crg #3 0x00000008 = Crg #4 0x00000010 = Crg #5 0x00000020 = Crg #6 0x00000040 = Crg #7 0x00000080 = Crg #8 0x00000100 = Crg #9 0x00000200 = Crg #10 0x00000400 = Crg #11 0x00000800 = Crg #12 0x00001000 = Crg #13 0x00002000 = Crg #14 0x00004000 = Crg #15 0x00008000 = Crg #16 0x00010000 = Crg #17 0x00020000 = Crg #18 0x00040000 = Crg #19 0x00080000 = Crg #20 0x00100000 = Crg #21 0x00200000 = Crg #22 0x00400000 = Crg #23 0x00800000 = Crg #24 0x01000000 = Crg #25 0x02000000 = Crg #26 0x04000000 = Crg #27 0x08000000 = Crg #28 0x10000000 = Crg #29 0x20000000 = Crg #30 0x40000000 = Crg #31 0x80000000 = Crg #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1911.07	7	<b>Store ID</b>	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Str #1 0x00000002 = Str #2 0x00000004 = Str #3 0x00000008 = Str #4 0x00000010 = Str #5 0x00000020 = Str #6 0x00000040 = Str #7 0x00000080 = Str #8 0x00000100 = Str #9 0x00000200 = Str #10 0x00000400 = Str #11 0x00000800 = Str #12 0x00001000 = Str #13 0x00002000 = Str #14 0x00004000 = Str #15 0x00008000 = Str #16 0x00010000 = Str #17 0x00020000 = Str #18 0x00040000 = Str #19 0x00080000 = Str #20 0x00100000 = Str #21 0x00200000 = Str #22 0x00400000 = Str #23 0x00800000 = Str #24 0x01000000 = Str #25 0x02000000 = Str #26 0x04000000 = Str #27 0x08000000 = Str #28 0x10000000 = Str #29 0x20000000 = Str #30 0x40000000 = Str #31 0x80000000 = Str #32
1911.08	8	<b>Weapon Package ID</b>  A value of "255" selects the default weapon package.	Unsigned 1	None	1 ≤ x
1911.09	9	<b>Weapon Package Firing Order</b>	Unsigned 1	None	1 ≤ x
1911.10	10	<b>Fuze Mode</b>	Unsigned 2	Bitmapped	0x0000 = No Selection 0x0001 = Impact 0x0002 = Time After Release 0x0004 = Time After Impact 0x0008 = Altitude 0x0010 = Depth 0x0020 = Proximity 0x0040 = Position of Target 0x0080 = Interference 0x0100 = Void 0x0200 = Layer 0x0400 = Low Voltage 0x0800 = Long Delay 0x1000 = Height 0x2000 = End of Life 0x4000 = Arm Delay Enable 0x8000 = Status Signal Enable

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1911.11	11	<b>Fuze Delay From Release</b> Time delay for fuze functioning after release.	Float	μs	0 ≤ x ≤ 2,361,099,999,999,999,900 ,000.0
1911.12	12	<b>Fuze Delay From Impact</b> Time delay for fuze functioning after impact.	Float	μs	0 ≤ x ≤ 2,361,099,999,999,999,900 ,000.0
1911.13	13	<b>Distance</b> Distance from the target for fuze functioning.	Integer 2	m	No Restrictions
1911.14	14	<b>Void Layer Number</b> Void/layer number at which the fuze is to function.	Unsigned 1	None	x ≤ 100
1911.15	15	<b>Fuze Function Time From Event</b> Time delay from specific event for fuze function or retard mechanism function.	Float	μs	0 ≤ x ≤ 2,361,099,999,999,999,900 ,000.0
1911.16	16	<b>Impact Velocity</b> Defines the minimum velocity the fuzing mechanism is expected to see at target impact in meters/second.	Float	m/s	0 ≤ x ≤ 8,192
1911.17	17	<b>High Drag Arm Time</b>	Float	μs	x ≤ 2,361,099,999,999,999,900 ,000.0
1911.18	18	<b>Fuze Initiation</b> Indicates the fuze initiation method to be used by the mission store.	Unsigned 1	Enumerated	0 = Default 1 = External Fuze Sensor 2 = Internal Fuze Sensor 3 = Reserved for Growth
1911.19	19	<b>Target Hardness</b> Commands the mission store to use fuze settings appropriate for the hardness of the target.	Unsigned 1	Enumerated	0 = Hardness Level 1 1 = Hardness Level 2 2 = Hardness Level 3 3 = Hardness Level 4
1911.20	20	<b>Store Retard Mechanism</b> Commands the mission store to enable its retard (i.e., high drag) mechanism.	Unsigned 1	Enumerated	0 = Separate in Low Drag Configuration 1 = Separate in High Drag Configuration
1911.21	21	<b>Enable Post Release Fuze Control</b> Commands the mission store to accept post release commands from authorized sources.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1911.22	22	<b>Fuze Time 1</b> Defines the start time after impact for the fuze to begin post impact target surveillance functions.	Float	μs	$0 \leq x \leq 2,361,099,999,999,999,900,000.0$
1911.23	23	<b>Fuze Time 2</b> Defines the stop time after impact for the fuze to end post impact target surveillance functions.	Float	μs	$0 \leq x \leq 2,361,099,999,999,999,900,000.0$
1911.24	24	<b>Enable Post Impact Fuze Surveillance</b>  Commands the mission store to set its fuze to begin post impact fuze target surveillance functions Fuze Time 1 and end post impact fuze target surveillance functions at Fuze Time 2.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1911.25	25	<b>Prox RF After Launch</b>  Enable Proximity RF Broadcast (time after launch).	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1911.26	26	<b>Prox RF Before Impact</b>  Enable Proximity RF Broadcast (time before impact).	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1911.27	27	<b>Tether Length</b>  Defines the length of tether that the fuze is to deploy to enable post impact fuze status transmissions. If the mission store does not have a tether capability, but can broadcast a status message, it ignores the data in this word.	Float	m	$0 \leq x \leq 511.99$
1911.28	28	<b>Interstage Gap Time</b>  The time gap between functioning of the fuze for each stage of a multi-stage warhead.	Float	μs	$x \leq 4,194,000$
1911.29	29	<b>Request ID</b>  A mission Unique ID to distinguish one request from another.	Unsigned 2	None	No Restrictions

**Table 4 - 147: Message #1911: Fuze Status****4.1.10.42 Message #1912: Weapon Laser Status**

This message shall communicate laser status from the UA to the CUCS for the selected weapon [DLI 0575]. It can be called directly as a part of a Message 1800-directed query by the

CUCS to the UA or as a response by the UA to the receipt of a Laser Control (1812) message. If the triplet (Hardpoint ID, Carriage ID, and Store ID) is set to no selection (0, 0, 0), then the Weapon Package ID and Weapon Package Firing Order are used to select the store.

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
<b>1912.01</b>	<b>1</b>	<b>Time Stamp</b>	Double	s	Refer to Section 1.7.2
<b>1912.02</b>	<b>2</b>	<b>Vehicle ID</b>	Integer 4	None	Refer to Section 1.7.5
<b>1912.03</b>	<b>3</b>	<b>CUCS ID</b>	Integer 4	None	Refer to Section 1.7.5
<b>1912.04</b>	<b>4</b>	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1912.05	5	Hardpoint ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Hdp #1 0x00000002 = Hdp #2 0x00000004 = Hdp #3 0x00000008 = Hdp #4 0x00000010 = Hdp #5 0x00000020 = Hdp #6 0x00000040 = Hdp #7 0x00000080 = Hdp #8 0x00000100 = Hdp #9 0x00000200 = Hdp #10 0x00000400 = Hdp #11 0x00000800 = Hdp #12 0x00001000 = Hdp #13 0x00002000 = Hdp #14 0x00004000 = Hdp #15 0x00008000 = Hdp #16 0x00010000 = Hdp #17 0x00020000 = Hdp #18 0x00040000 = Hdp #19 0x00080000 = Hdp #20 0x00100000 = Hdp #21 0x00200000 = Hdp #22 0x00400000 = Hdp #23 0x00800000 = Hdp #24 0x01000000 = Hdp #25 0x02000000 = Hdp #26 0x04000000 = Hdp #27 0x08000000 = Hdp #28 0x10000000 = Hdp #29 0x20000000 = Hdp #30 0x40000000 = Hdp #31 0x80000000 = Hdp #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1912.06	6	Carriage ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Crg #1 0x00000002 = Crg #2 0x00000004 = Crg #3 0x00000008 = Crg #4 0x00000010 = Crg #5 0x00000020 = Crg #6 0x00000040 = Crg #7 0x00000080 = Crg #8 0x00000100 = Crg #9 0x00000200 = Crg #10 0x00000400 = Crg #11 0x00000800 = Crg #12 0x00001000 = Crg #13 0x00002000 = Crg #14 0x00004000 = Crg #15 0x00008000 = Crg #16 0x00010000 = Crg #17 0x00020000 = Crg #18 0x00040000 = Crg #19 0x00080000 = Crg #20 0x00100000 = Crg #21 0x00200000 = Crg #22 0x00400000 = Crg #23 0x00800000 = Crg #24 0x01000000 = Crg #25 0x02000000 = Crg #26 0x04000000 = Crg #27 0x08000000 = Crg #28 0x10000000 = Crg #29 0x20000000 = Crg #30 0x40000000 = Crg #31 0x80000000 = Crg #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1912.07	7	<b>Store ID</b>	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Str #1 0x00000002 = Str #2 0x00000004 = Str #3 0x00000008 = Str #4 0x00000010 = Str #5 0x00000020 = Str #6 0x00000040 = Str #7 0x00000080 = Str #8 0x00000100 = Str #9 0x00000200 = Str #10 0x00000400 = Str #11 0x00000800 = Str #12 0x00001000 = Str #13 0x00002000 = Str #14 0x00004000 = Str #15 0x00008000 = Str #16 0x00010000 = Str #17 0x00020000 = Str #18 0x00040000 = Str #19 0x00080000 = Str #20 0x00100000 = Str #21 0x00200000 = Str #22 0x00400000 = Str #23 0x00800000 = Str #24 0x01000000 = Str #25 0x02000000 = Str #26 0x04000000 = Str #27 0x08000000 = Str #28 0x10000000 = Str #29 0x20000000 = Str #30 0x40000000 = Str #31 0x80000000 = Str #32
1912.08	8	<b>Weapon Package ID</b>  A value of "255" selects the default weapon package.	Unsigned 1	None	1 ≤ x
1912.09	9	<b>Weapon Package Firing Order</b>	Unsigned 1	None	1 ≤ x
1912.10	10	<b>Laser Transmitter Monitor</b>	Unsigned 1	Enumerated	0 = Laser Transmitter Off 1 = Laser Transmitter Standby 2 = Laser Transmitter On Before and After Launch 3 = Laser Transmitter On After Launch Only
1912.11	11	<b>Laser Arm Monitor</b>	Unsigned 1	Enumerated	0 = Not Armed 1 = Armed
1912.12	12	<b>Laser Transmitter Output</b>	Unsigned 1	Enumerated	0 = Tactical Operation Disabled 1 = Tactical Operation Enabled

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1912.13	13	<b>Laser Receiver Monitor</b>	Unsigned 1	Enumerated	0 = Laser Receiver Off 1 = Laser Receiver Standby 2 = Laser Receiver On Before and After Launch 3 = Laser Receiver On After Launch Only
1912.14	14	<b>Laser Code Status</b>	Unsigned 1	Enumerated	0 = Invalid 1 = Valid 2 = Unknown 3 - 255 = Weapon Specific
1912.15	15	<b>Laser Mode</b>	Unsigned 1	Enumerated	0 - 7 = Reserved
1912.16	16	<b>Laser Code</b>  Laser Illuminator Code per STANAG 5516 (Ed 2) (Link 16) Page E-3-527 DFI #1676 DUI 001.	Unsigned 2	None	No Restrictions
1912.17	17	<b>Laser Transmitter Status</b>  Mission store laser transmitter status.	Unsigned 1	Enumerated	0 = N/A 1 = Off 2 = Standby 3 = On Before and After Launch 4 = On After Launch Only
1912.18	18	<b>Laser Arm Status</b>	Unsigned 1	Enumerated	0 = N/A 1 = Safe 2 = Arm
1912.19	19	<b>Laser Transmitter Output Status</b>  Controls the mission store laser transmitter output.	Unsigned 1	Enumerated	0 = N/A 1 = Reduced Power Eye Safe Mode 2 = Tactical Mode
1912.20	20	<b>Laser Receiver Control Status</b>  Controls the mission store laser receiver.	Unsigned 1	Enumerated	0 = Off 1 = Standby 2 = On Before and After Launch 3 = On After Launch Only
1912.21	21	<b>Request ID</b>	Unsigned 2	None	No Restrictions

**Table 4 - 148: Message #1912: Weapon Laser Status**

#### 4.1.10.43 Message #1913: Rack Status

This message shall contain the carriage rack and bomb rack status [DLI 0576]. This message is sent in a response to the following messages:

- Prepare Store (#1805) (if a rack is present)
- Weapon Fire Control (#1808) (if a rack is present)
- Rack Control (#1822)

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1913.01	1	Time Stamp	Double	s	Refer to Section 1.7.2
1913.02	2	Vehicle ID	Integer 4	None	Refer to Section 1.7.5
1913.03	3	CUCS ID	Integer 4	None	Refer to Section 1.7.5
1913.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1913.05	5	Hardpoint ID	Unsigned 4	Bitmapped	0x00000001 = Hdp #1 0x00000002 = Hdp #2 0x00000004 = Hdp #3 0x00000008 = Hdp #4 0x00000010 = Hdp #5 0x00000020 = Hdp #6 0x00000040 = Hdp #7 0x00000080 = Hdp #8 0x00000100 = Hdp #9 0x00000200 = Hdp #10 0x00000400 = Hdp #11 0x00000800 = Hdp #12 0x00001000 = Hdp #13 0x00002000 = Hdp #14 0x00004000 = Hdp #15 0x00008000 = Hdp #16 0x00010000 = Hdp #17 0x00020000 = Hdp #18 0x00040000 = Hdp #19 0x00080000 = Hdp #20 0x00100000 = Hdp #21 0x00200000 = Hdp #22 0x00400000 = Hdp #23 0x00800000 = Hdp #24 0x01000000 = Hdp #25 0x02000000 = Hdp #26 0x04000000 = Hdp #27 0x08000000 = Hdp #28 0x10000000 = Hdp #29 0x20000000 = Hdp #30 0x40000000 = Hdp #31 0x80000000 = Hdp #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1913.06	6	Carriage ID	Unsigned 4	Bitmapped	0x00000000 = None 0x00000001 = Crg #1 0x00000002 = Crg #2 0x00000004 = Crg #3 0x00000008 = Crg #4 0x00000010 = Crg #5 0x00000020 = Crg #6 0x00000040 = Crg #7 0x00000080 = Crg #8 0x00000100 = Crg #9 0x00000200 = Crg #10 0x00000400 = Crg #11 0x00000800 = Crg #12 0x00001000 = Crg #13 0x00002000 = Crg #14 0x00004000 = Crg #15 0x00008000 = Crg #16 0x00010000 = Crg #17 0x00020000 = Crg #18 0x00040000 = Crg #19 0x00080000 = Crg #20 0x00100000 = Crg #21 0x00200000 = Crg #22 0x00400000 = Crg #23 0x00800000 = Crg #24 0x01000000 = Crg #25 0x02000000 = Crg #26 0x04000000 = Crg #27 0x08000000 = Crg #28 0x10000000 = Crg #29 0x20000000 = Crg #30 0x40000000 = Crg #31 0x80000000 = Crg #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1913.07	7	<b>Store ID</b>	Unsigned 4	Bitmapped	0x00000000 = None 0x00000001 = Str #1 0x00000002 = Str #2 0x00000004 = Str #3 0x00000008 = Str #4 0x00000010 = Str #5 0x00000020 = Str #6 0x00000040 = Str #7 0x00000080 = Str #8 0x00000100 = Str #9 0x00000200 = Str #10 0x00000400 = Str #11 0x00000800 = Str #12 0x00001000 = Str #13 0x00002000 = Str #14 0x00004000 = Str #15 0x00008000 = Str #16 0x00010000 = Str #17 0x00020000 = Str #18 0x00040000 = Str #19 0x00080000 = Str #20 0x00100000 = Str #21 0x00200000 = Str #22 0x00400000 = Str #23 0x00800000 = Str #24 0x01000000 = Str #25 0x02000000 = Str #26 0x04000000 = Str #27 0x08000000 = Str #28 0x10000000 = Str #29 0x20000000 = Str #30 0x40000000 = Str #31 0x80000000 = Str #32
1913.08	8	<b>Reversible InFlight Lockout (RIFL) Unlock</b>	Unsigned 1	Enumerated	0 = Locked 1 = Unlocked
1913.09	9	<b>Nose Arm</b>	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1913.10	10	<b>Center Arm</b>	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1913.11	11	<b>Tail Arm</b>	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1913.12	12	<b>Rack Ready</b>  Indicates the rack is in the ready position (cocked).	Unsigned 1	Enumerated	0 = Not Ready 1 = Ready

**Table 4 - 149: Message #1913: Rack Status**

#### 4.1.10.44 Message #1914: Primary Carriage Status

This message shall report carriage system-specific status [DLI 0577]. This message is sent in a response to the following messages:

- Prepare Store (#1805)
- Weapon Fire Control (#1808)
- Carriage Control (#1823)

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1914.01	1	Time Stamp	Double	s	Refer to Section 1.7.2
1914.02	2	Vehicle ID	Integer 4	None	Refer to Section 1.7.5
1914.03	3	CUCS ID	Integer 4	None	Refer to Section 1.7.5
1914.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1914.05	5	Hardpoint ID	Unsigned 4	Bitmapped	0x00000001 = Hdp #1 0x00000002 = Hdp #2 0x00000004 = Hdp #3 0x00000008 = Hdp #4 0x00000010 = Hdp #5 0x00000020 = Hdp #6 0x00000040 = Hdp #7 0x00000080 = Hdp #8 0x00000100 = Hdp #9 0x00000200 = Hdp #10 0x00000400 = Hdp #11 0x00000800 = Hdp #12 0x00001000 = Hdp #13 0x00002000 = Hdp #14 0x00004000 = Hdp #15 0x00008000 = Hdp #16 0x00010000 = Hdp #17 0x00020000 = Hdp #18 0x00040000 = Hdp #19 0x00080000 = Hdp #20 0x00100000 = Hdp #21 0x00200000 = Hdp #22 0x00400000 = Hdp #23 0x00800000 = Hdp #24 0x01000000 = Hdp #25 0x02000000 = Hdp #26 0x04000000 = Hdp #27 0x08000000 = Hdp #28 0x10000000 = Hdp #29 0x20000000 = Hdp #30 0x40000000 = Hdp #31 0x80000000 = Hdp #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1914.06	6	Carriage ID	Unsigned 4	Bitmapped	0x00000001 = Crg #1 0x00000002 = Crg #2 0x00000004 = Crg #3 0x00000008 = Crg #4 0x00000010 = Crg #5 0x00000020 = Crg #6 0x00000040 = Crg #7 0x00000080 = Crg #8 0x00000100 = Crg #9 0x00000200 = Crg #10 0x00000400 = Crg #11 0x00000800 = Crg #12 0x00001000 = Crg #13 0x00002000 = Crg #14 0x00004000 = Crg #15 0x00008000 = Crg #16 0x00010000 = Crg #17 0x00020000 = Crg #18 0x00040000 = Crg #19 0x00080000 = Crg #20 0x00100000 = Crg #21 0x00200000 = Crg #22 0x00400000 = Crg #23 0x00800000 = Crg #24 0x01000000 = Crg #25 0x02000000 = Crg #26 0x04000000 = Crg #27 0x08000000 = Crg #28 0x10000000 = Crg #29 0x20000000 = Crg #30 0x40000000 = Crg #31 0x80000000 = Crg #32
1914.07	7	Carriage State	Unsigned 1	Enumerated	0 = Off 1 = Unsafe 2 = Degraded 3 = Ready
1914.08	8	Carriage Inventory Complete	Unsigned 1	Enumerated	0 = False 1 = True
1914.09	9	Critical BIT Failure	Unsigned 1	Enumerated	0 = False 1 = True
1914.10	10	Resort Stores State	Unsigned 1	Enumerated	0 = False 1 = True
1914.11	11	Invalid Loadout	Unsigned 1	Enumerated	0 = False 1 = True
1914.12	12	Invalid Release Order	Unsigned 1	Enumerated	0 = False 1 = True
1914.13	13	TM Status	Unsigned 1	Enumerated	0 = Not Present 1 = Present OFF 2 = Present ON

Table 4 - 150: Message #1914: Primary Carriage Status

#### 4.1.10.45 Message #1915: Secondary Carriage Status

This message shall report general carriage system-specific status [DLI 0578].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1915.01	1	Time Stamp	Double	s	Refer to Section 1.7.2
1915.02	2	Vehicle ID	Integer 4	None	Refer to Section 1.7.5
1915.03	3	CUCS ID	Integer 4	None	Refer to Section 1.7.5
1915.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1915.05	5	Hardpoint ID	Unsigned 4	Bitmapped	0x00000001 = Hdp #1 0x00000002 = Hdp #2 0x00000004 = Hdp #3 0x00000008 = Hdp #4 0x00000010 = Hdp #5 0x00000020 = Hdp #6 0x00000040 = Hdp #7 0x00000080 = Hdp #8 0x00000100 = Hdp #9 0x00000200 = Hdp #10 0x00000400 = Hdp #11 0x00000800 = Hdp #12 0x00001000 = Hdp #13 0x00002000 = Hdp #14 0x00004000 = Hdp #15 0x00008000 = Hdp #16 0x00010000 = Hdp #17 0x00020000 = Hdp #18 0x00040000 = Hdp #19 0x00080000 = Hdp #20 0x00100000 = Hdp #21 0x00200000 = Hdp #22 0x00400000 = Hdp #23 0x00800000 = Hdp #24 0x01000000 = Hdp #25 0x02000000 = Hdp #26 0x04000000 = Hdp #27 0x08000000 = Hdp #28 0x10000000 = Hdp #29 0x20000000 = Hdp #30 0x40000000 = Hdp #31 0x80000000 = Hdp #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1915.06	6	<b>Carriage ID</b>	Unsigned 4	Bitmapped	0x00000001 = Crg #1 0x00000002 = Crg #2 0x00000004 = Crg #3 0x00000008 = Crg #4 0x00000010 = Crg #5 0x00000020 = Crg #6 0x00000040 = Crg #7 0x00000080 = Crg #8 0x00000100 = Crg #9 0x00000200 = Crg #10 0x00000400 = Crg #11 0x00000800 = Crg #12 0x00001000 = Crg #13 0x00002000 = Crg #14 0x00004000 = Crg #15 0x00008000 = Crg #16 0x00010000 = Crg #17 0x00020000 = Crg #18 0x00040000 = Crg #19 0x00080000 = Crg #20 0x00100000 = Crg #21 0x00200000 = Crg #22 0x00400000 = Crg #23 0x00800000 = Crg #24 0x01000000 = Crg #25 0x02000000 = Crg #26 0x04000000 = Crg #27 0x08000000 = Crg #28 0x10000000 = Crg #29 0x20000000 = Crg #30 0x40000000 = Crg #31 0x80000000 = Crg #32
1915.07	7	<b>Power Interruption</b>	Unsigned 1	Enumerated	0 = False 1 = True
1915.08	8	<b>Training Mode On</b>	Unsigned 1	Enumerated	0 = False 1 = True
1915.09	9	<b>Platform ID Received</b>	Unsigned 1	Enumerated	0 = False 1 = True
1915.10	10	<b>Compressor Pressure Good</b>	Unsigned 1	Enumerated	0 = False 1 = True
1915.11	11	<b>Internal Power Supply Present</b>	Unsigned 1	Enumerated	0 = False 1 = True
1915.12	12	<b>28V DC2 Power Present</b>	Unsigned 1	Enumerated	0 = False 1 = True
1915.13	13	<b>Release Consent Present</b>	Unsigned 1	Enumerated	0 = False 1 = True

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1915.14	14	<b>IBIT Control</b> Status of last IBIT command received by carriage system.	Unsigned 1	Enumerated	0 = IBIT Carriage System 1 = IBIT Carriage and Mission Stores
1915.15	15	<b>CDS Data Received</b>	Unsigned 1	Enumerated	0 = False 1 = True
1915.16	16	<b>CDS Compatibility Fault</b>	Unsigned 1	Enumerated	0 = False 1 = True
1915.17	17	<b>BIT Code 1</b> Carriage specific BIT codes. May be defined in the CDS file or in specific carriage documentation.	Unsigned 1	None	No Restrictions
1915.18	18	<b>BIT Code 2</b> Carriage specific BIT codes. May be defined in the CDS file or in specific carriage documentation.	Unsigned 1	None	No Restrictions
1915.19	19	<b>BIT Code 3</b> Carriage specific BIT codes. May be defined in the CDS file or in specific carriage documentation.	Unsigned 1	None	No Restrictions
1915.20	20	<b>BIT Code 4</b> Carriage specific BIT codes. May be defined in the CDS file or in specific carriage documentation.	Unsigned 1	None	No Restrictions
1915.21	21	<b>BIT Code 5</b> Carriage specific BIT codes. May be defined in the CDS file or in specific carriage documentation.	Unsigned 1	None	No Restrictions
1915.22	22	<b>BIT Code 6</b> Carriage specific BIT codes. May be defined in the CDS file or in specific carriage documentation.	Unsigned 1	None	No Restrictions
1915.23	23	<b>BIT Code 7</b> Carriage specific BIT codes. May be defined in the CDS file or in specific carriage documentation.	Unsigned 1	None	No Restrictions
1915.24	24	<b>BIT Code 8</b> Carriage specific BIT codes. May be defined in the CDS file or in specific carriage documentation.	Unsigned 1	None	No Restrictions

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1915.25	25	<b>Erase Command/Authority Status</b>  Erase sensitive data status.	Unsigned 1	Enumerated	0 = Nothing Erased 1 = Erasing Sensitive Data 2 = Erasing Store OFP 3 = Sensitive Data Erased 4 = Store OFP Erased 5 - 255 = Store Specific Status
1915.26	26	<b>Config ID Complete</b>	Unsigned 1	Enumerated	0 = False 1 = True

**Table 4 - 151: Message #1915: Secondary Carriage Status****4.1.10.46 Message #1916: Modify Target Status**

This message shall confirm or report the current target for the reporting store [DLI 0579]. If the triplet (Hardpoint ID, Carriage ID, and Store ID) is set to no selection (0, 0, 0), then the Weapon Package ID and Weapon Package Firing Order are used to select the store.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1916.01	1	<b>Time Stamp</b>	Double	s	Refer to Section 1.7.2
1916.02	2	<b>Vehicle ID</b>	Integer 4	None	Refer to Section 1.7.5
1916.03	3	<b>CUCS ID</b>	Integer 4	None	Refer to Section 1.7.5
1916.04	4	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1916.05	5	Hardpoint ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Hdp #1 0x00000002 = Hdp #2 0x00000004 = Hdp #3 0x00000008 = Hdp #4 0x00000010 = Hdp #5 0x00000020 = Hdp #6 0x00000040 = Hdp #7 0x00000080 = Hdp #8 0x00000100 = Hdp #9 0x00000200 = Hdp #10 0x00000400 = Hdp #11 0x00000800 = Hdp #12 0x00001000 = Hdp #13 0x00002000 = Hdp #14 0x00004000 = Hdp #15 0x00008000 = Hdp #16 0x00010000 = Hdp #17 0x00020000 = Hdp #18 0x00040000 = Hdp #19 0x00080000 = Hdp #20 0x00100000 = Hdp #21 0x00200000 = Hdp #22 0x00400000 = Hdp #23 0x00800000 = Hdp #24 0x01000000 = Hdp #25 0x02000000 = Hdp #26 0x04000000 = Hdp #27 0x08000000 = Hdp #28 0x10000000 = Hdp #29 0x20000000 = Hdp #30 0x40000000 = Hdp #31 0x80000000 = Hdp #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1916.06	6	Carriage ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Crg #1 0x00000002 = Crg #2 0x00000004 = Crg #3 0x00000008 = Crg #4 0x00000010 = Crg #5 0x00000020 = Crg #6 0x00000040 = Crg #7 0x00000080 = Crg #8 0x00000100 = Crg #9 0x00000200 = Crg #10 0x00000400 = Crg #11 0x00000800 = Crg #12 0x00001000 = Crg #13 0x00002000 = Crg #14 0x00004000 = Crg #15 0x00008000 = Crg #16 0x00010000 = Crg #17 0x00020000 = Crg #18 0x00040000 = Crg #19 0x00080000 = Crg #20 0x00100000 = Crg #21 0x00200000 = Crg #22 0x00400000 = Crg #23 0x00800000 = Crg #24 0x01000000 = Crg #25 0x02000000 = Crg #26 0x04000000 = Crg #27 0x08000000 = Crg #28 0x10000000 = Crg #29 0x20000000 = Crg #30 0x40000000 = Crg #31 0x80000000 = Crg #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1916.07	7	<b>Store ID</b>	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Str #1 0x00000002 = Str #2 0x00000004 = Str #3 0x00000008 = Str #4 0x00000010 = Str #5 0x00000020 = Str #6 0x00000040 = Str #7 0x00000080 = Str #8 0x00000100 = Str #9 0x00000200 = Str #10 0x00000400 = Str #11 0x00000800 = Str #12 0x00001000 = Str #13 0x00002000 = Str #14 0x00004000 = Str #15 0x00008000 = Str #16 0x00010000 = Str #17 0x00020000 = Str #18 0x00040000 = Str #19 0x00080000 = Str #20 0x00100000 = Str #21 0x00200000 = Str #22 0x00400000 = Str #23 0x00800000 = Str #24 0x01000000 = Str #25 0x02000000 = Str #26 0x04000000 = Str #27 0x08000000 = Str #28 0x10000000 = Str #29 0x20000000 = Str #30 0x40000000 = Str #31 0x80000000 = Str #32
1916.08	8	<b>Weapon Package ID</b>  A value of "255" selects the default weapon package.	Unsigned 1	None	$1 \leq x$
1916.09	9	<b>Weapon Package Firing Order</b>	Unsigned 1	None	$1 \leq x$
1916.10	10	<b>Mission Number</b>	Unsigned 2	None	No Restrictions
1916.11	11	<b>PF Control</b>	Unsigned 1	Enumerated	0 = Use PF Default/Panel Settings 1 = Use PF Data
1916.12	12	<b>Flight Mode</b>	Unsigned 1	Enumerated	0 = Default Store 1 = Range On Heading 2 = Use Attack Heading 3 = Direct Trajectory Store
1916.13	13	<b>Target Class Type</b>	Unsigned 1	Enumerated	0 - 255 = Weapon-specific Target Class
1916.14	14	<b>Latitude</b>	Double	rad	$-\pi/2 \leq x \leq \pi/2$
1916.15	15	<b>Longitude</b>	Double	rad	$-\pi \leq x \leq \pi$
1916.16	16	<b>Altitude</b>	Float	m	$-500 \leq x \leq 10,000$
1916.17	17	<b>Velocity</b>	Float	m/s	$0 \leq x \leq 8,192$
1916.18	18	<b>Attack Heading</b>	Float	rad	$-\pi \leq x \leq \pi$

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1916.19	19	Impact Angle	Float	rad	$0 \leq x \leq \pi/2$
1916.20	20	Target Wind North	Integer 1	None	$-127 \leq x$
1916.21	21	Target Wind East	Integer 1	None	$-127 \leq x$
1916.22	22	Ingress/Cruise Mach	Float	Mach	$0 \leq x \leq 8$
1916.23	23	Ingress/Cruise Altitude	Unsigned 2	m	$x \leq 65,534$
1916.24	24	Range	Double	m	$0 \leq x \leq 16,383$
1916.25	25	Endgame Entry Altitude	Double	m	$-16,383 \leq x \leq 16,383$
1916.26	26	Offset North	Double	m	$-16,383 \leq x \leq 16,383$
1916.27	27	Offset East	Double	m	$-16,383 \leq x \leq 16,383$
1916.28	28	Offset Down	Double	m	$-16,383 \leq x \leq 16,383$
1916.29	29	Target Velocity North	Double	m/s	$-8,192 \leq x \leq 8,192$
1916.30	30	Target Velocity East	Double	m/s	$-8,192 \leq x \leq 8,192$
1916.31	31	North Velocity Uncertainty	Double	m/s	$-8,192 \leq x \leq 8,192$
1916.32	32	East Velocity Uncertainty	Double	m/s	$-8,192 \leq x \leq 8,192$
1916.33	33	TLE Major Axis	Unsigned 2	m	$x \leq 4,080$
1916.34	34	TLE Minor Axis	Unsigned 2	m	$x \leq 4,080$
1916.35	35	TLE Direction	Float	rad	$0 \leq x \leq \pi$
1916.36	36	TLE Vertical	Unsigned 1	m	No Restrictions
1916.37	37	Spin Rate	Unsigned 2	RPM	No Restrictions
1916.38	38	Aircraft Targeting	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1916.39	39	Target Data Sequence ID  From Unique ID #1815.39 of corresponding Message #1815	Unsigned 4	None	No Restrictions

**Table 4 - 152: Message #1916: Modify Target Status****4.1.10.47 Message #1917: Store Growth Status**

This message shall be used for Store Growth Provision [DLI 0580]. If the triplet (Hardpoint ID, Carriage ID, and Store ID) is set to no selection (0, 0, 0), then the Weapon Package ID and Weapon Package Firing Order are used to select the store.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1917.01	1	Time Stamp	Double	s	Refer to Section 1.7.2
1917.02	2	Vehicle ID	Integer 4	None	Refer to Section 1.7.5
1917.03	3	CUCS ID	Integer 4	None	Refer to Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1917.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1917.05	5	Hardpoint ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Hdp #1 0x00000002 = Hdp #2 0x00000004 = Hdp #3 0x00000008 = Hdp #4 0x00000010 = Hdp #5 0x00000020 = Hdp #6 0x00000040 = Hdp #7 0x00000080 = Hdp #8 0x00000100 = Hdp #9 0x00000200 = Hdp #10 0x00000400 = Hdp #11 0x00000800 = Hdp #12 0x00001000 = Hdp #13 0x00002000 = Hdp #14 0x00004000 = Hdp #15 0x00008000 = Hdp #16 0x00010000 = Hdp #17 0x00020000 = Hdp #18 0x00040000 = Hdp #19 0x00080000 = Hdp #20 0x00100000 = Hdp #21 0x00200000 = Hdp #22 0x00400000 = Hdp #23 0x00800000 = Hdp #24 0x01000000 = Hdp #25 0x02000000 = Hdp #26 0x04000000 = Hdp #27 0x08000000 = Hdp #28 0x10000000 = Hdp #29 0x20000000 = Hdp #30 0x40000000 = Hdp #31 0x80000000 = Hdp #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1917.06	6	Carriage ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Crg #1 0x00000002 = Crg #2 0x00000004 = Crg #3 0x00000008 = Crg #4 0x00000010 = Crg #5 0x00000020 = Crg #6 0x00000040 = Crg #7 0x00000080 = Crg #8 0x00000100 = Crg #9 0x00000200 = Crg #10 0x00000400 = Crg #11 0x00000800 = Crg #12 0x00001000 = Crg #13 0x00002000 = Crg #14 0x00004000 = Crg #15 0x00008000 = Crg #16 0x00010000 = Crg #17 0x00020000 = Crg #18 0x00040000 = Crg #19 0x00080000 = Crg #20 0x00100000 = Crg #21 0x00200000 = Crg #22 0x00400000 = Crg #23 0x00800000 = Crg #24 0x01000000 = Crg #25 0x02000000 = Crg #26 0x04000000 = Crg #27 0x08000000 = Crg #28 0x10000000 = Crg #29 0x20000000 = Crg #30 0x40000000 = Crg #31 0x80000000 = Crg #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1917.07	7	<b>Store ID</b>	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Str #1 0x00000002 = Str #2 0x00000004 = Str #3 0x00000008 = Str #4 0x00000010 = Str #5 0x00000020 = Str #6 0x00000040 = Str #7 0x00000080 = Str #8 0x00000100 = Str #9 0x00000200 = Str #10 0x00000400 = Str #11 0x00000800 = Str #12 0x00001000 = Str #13 0x00002000 = Str #14 0x00004000 = Str #15 0x00008000 = Str #16 0x00010000 = Str #17 0x00020000 = Str #18 0x00040000 = Str #19 0x00080000 = Str #20 0x00100000 = Str #21 0x00200000 = Str #22 0x00400000 = Str #23 0x00800000 = Str #24 0x01000000 = Str #25 0x02000000 = Str #26 0x04000000 = Str #27 0x08000000 = Str #28 0x10000000 = Str #29 0x20000000 = Str #30 0x40000000 = Str #31 0x80000000 = Str #32
1917.08	8	<b>Weapon Package ID</b>  A value of "255" selects the default weapon package.	Unsigned 1	None	1 ≤ x
1917.09	9	<b>Weapon Package Firing Order</b>	Unsigned 1	None	1 ≤ x
1917.10	10	<b>Growth Provision Function A</b>  Mission store customizable user defined commands.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1917.11	11	<b>Function A User Defined Value</b>  Mission store customizable user defined commands.	Unsigned 2	None	No Restrictions
1917.12	12	<b>Growth Provision Function B</b>  Mission store customizable user defined commands.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1917.13	13	<b>Function B User Defined Value</b>  Mission store customizable user defined commands.	Unsigned 2	None	No Restrictions

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1917.14	14	<b>Growth Provision Function C</b>  Mission store customizable user defined commands.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1917.15	15	<b>Function C User Defined Value</b>  Mission store customizable user defined commands.	Unsigned 2	None	No Restrictions
1917.16	16	<b>Growth Provision Function D</b>  Mission store customizable user defined commands.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1917.17	17	<b>Function D User Defined Value</b>  Mission store customizable user defined commands.	Unsigned 2	None	No Restrictions
1917.18	18	<b>Growth Provision Function E</b>  Mission store customizable user defined commands.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1917.19	19	<b>Function E User Defined Value</b>  Mission store customizable user defined commands.	Unsigned 2	None	No Restrictions
1917.20	20	<b>Growth Provision Function F</b>  Mission store customizable user defined commands.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1917.21	21	<b>Function F User Defined Value</b>  Mission store customizable user defined commands.	Unsigned 2	None	No Restrictions
1917.22	22	<b>Growth Provision Function G</b>  Mission store customizable user defined commands.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1917.23	23	<b>Function G User Defined Value</b>  Mission store customizable user defined commands.	Unsigned 2	None	No Restrictions
1917.24	24	<b>Growth Provision Function H</b>  Mission store customizable user defined commands.	Unsigned 1	Enumerated	0 = Disabled 1 = Enabled
1917.25	25	<b>Function H User Defined Value</b>  Mission store customizable user defined commands.	Unsigned 2	None	No Restrictions

**Table 4 - 153: Message #1917: Store Growth Status****4.1.10.48 Message #1919: Modify Weapon Loiter Status**

This message shall report mission loiter status [DLI 0581]. If the triplet (Hardpoint ID, Carriage ID, and Store ID) is set to no selection (0, 0, 0), then the Weapon Package ID and Weapon Package Firing Order is used to select the store.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1919.01	1	Time Stamp	Double	s	Refer to Section 1.7.2
1919.02	2	Vehicle ID	Integer 4	None	Refer to Section 1.7.5
1919.03	3	CUCS ID	Integer 4	None	Refer to Section 1.7.5
1919.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1919.05	5	Hardpoint ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Hdp #1 0x00000002 = Hdp #2 0x00000004 = Hdp #3 0x00000008 = Hdp #4 0x00000010 = Hdp #5 0x00000020 = Hdp #6 0x00000040 = Hdp #7 0x00000080 = Hdp #8 0x00000100 = Hdp #9 0x00000200 = Hdp #10 0x00000400 = Hdp #11 0x00000800 = Hdp #12 0x00001000 = Hdp #13 0x00002000 = Hdp #14 0x00004000 = Hdp #15 0x00008000 = Hdp #16 0x00010000 = Hdp #17 0x00020000 = Hdp #18 0x00040000 = Hdp #19 0x00080000 = Hdp #20 0x00100000 = Hdp #21 0x00200000 = Hdp #22 0x00400000 = Hdp #23 0x00800000 = Hdp #24 0x01000000 = Hdp #25 0x02000000 = Hdp #26 0x04000000 = Hdp #27 0x08000000 = Hdp #28 0x10000000 = Hdp #29 0x20000000 = Hdp #30 0x40000000 = Hdp #31 0x80000000 = Hdp #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1919.06	6	Carriage ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Crg #1 0x00000002 = Crg #2 0x00000004 = Crg #3 0x00000008 = Crg #4 0x00000010 = Crg #5 0x00000020 = Crg #6 0x00000040 = Crg #7 0x00000080 = Crg #8 0x00000100 = Crg #9 0x00000200 = Crg #10 0x00000400 = Crg #11 0x00000800 = Crg #12 0x00001000 = Crg #13 0x00002000 = Crg #14 0x00004000 = Crg #15 0x00008000 = Crg #16 0x00010000 = Crg #17 0x00020000 = Crg #18 0x00040000 = Crg #19 0x00080000 = Crg #20 0x00100000 = Crg #21 0x00200000 = Crg #22 0x00400000 = Crg #23 0x00800000 = Crg #24 0x01000000 = Crg #25 0x02000000 = Crg #26 0x04000000 = Crg #27 0x08000000 = Crg #28 0x10000000 = Crg #29 0x20000000 = Crg #30 0x40000000 = Crg #31 0x80000000 = Crg #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1919.07	7	<b>Store ID</b>	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Str #1 0x00000002 = Str #2 0x00000004 = Str #3 0x00000008 = Str #4 0x00000010 = Str #5 0x00000020 = Str #6 0x00000040 = Str #7 0x00000080 = Str #8 0x00000100 = Str #9 0x00000200 = Str #10 0x00000400 = Str #11 0x00000800 = Str #12 0x00001000 = Str #13 0x00002000 = Str #14 0x00004000 = Str #15 0x00008000 = Str #16 0x00010000 = Str #17 0x00020000 = Str #18 0x00040000 = Str #19 0x00080000 = Str #20 0x00100000 = Str #21 0x00200000 = Str #22 0x00400000 = Str #23 0x00800000 = Str #24 0x01000000 = Str #25 0x02000000 = Str #26 0x04000000 = Str #27 0x08000000 = Str #28 0x10000000 = Str #29 0x20000000 = Str #30 0x40000000 = Str #31 0x80000000 = Str #32
1919.08	8	<b>Weapon Package ID</b>  A value of "255" selects the default weapon package.	Unsigned 1	None	$1 \leq x$
1919.09	9	<b>Weapon Package Firing Order</b>	Unsigned 1	None	$1 \leq x$
1919.10	10	<b>Mission Number</b>	Unsigned 2	None	No Restrictions
1919.11	11	<b>Flight Mode</b>	Unsigned 1	Enumerated	0 = Default 1 = Range On Heading (Fly-To) 2 = Use Ingress True Heading (Point & Shoot) 3 - 255 = Reserved
1919.12	12	<b>Latitude</b>	Double	rad	$-\pi/2 \leq x \leq \pi/2$
1919.13	13	<b>Longitude</b>	Double	rad	$-\pi \leq x \leq \pi$
1919.14	14	<b>Altitude</b>	Double	m	$-500 \leq x \leq 10,000$

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1919.15	15	<b>Heading to Endpoint</b> 1. A zero value for this field specifies store flight from South to North. 2. A 90 degree value for this field specifies store flight from West to East.	Float	rad	$-\pi \leq x \leq \pi$
1919.16	16	<b>Range</b> This field defines the Range to the endpoint location.	Double	m	$10,000 \leq x \leq 185,000$
1919.17	17	<b>Ingress Mach</b>	Float	M	$0.25 \leq x \leq 0.95$
1919.18	18	<b>Ingress Altitude</b>	Double	m	$-500 \leq x \leq 16,777,000.0$
1919.19	19	<b>Ingress True Heading</b> 1. A zero value for this field specifies store flight from South to North. 2. A 90 degree value for this field specifies store flight from West to East.	Float	rad	$-\pi \leq x \leq \pi$
1919.20	20	<b>Ingress Max Commanded Range</b>	Double	m	$0 \leq x \leq 16,777,000.0$
1919.21	21	<b>Ingress Payload Control</b>	Unsigned 1	Enumerated	0 = No Control 1 = Control Setting 1 2 = Control Setting 2 3 = Control Setting 3 4 = Control Setting 4 5 = Control Setting 5 6 = Control Setting 6 7 = Control Setting 7 8 - 255 = Reserved
1919.22	22	<b>Orbit Payload Controls</b>	Unsigned 1	Enumerated	0 = No Control 1 = Control Setting 1 2 = Control Setting 2 3 = Control Setting 3 4 = Control Setting 4 5 = Control Setting 5 6 = Control Setting 6 7 = Control Setting 7 8 - 255 = Reserved
1919.23	23	<b>Payload Control 1</b>	Unsigned 1	Enumerated	0 = No Control 1 = Control Setting 1 2 = Control Setting 2 3 = Control Setting 3 4 - 255 = Reserved
1919.24	24	<b>Payload Control 2</b>	Unsigned 1	Enumerated	0 = No Control 1 = Control Setting 1 2 = Control Setting 2 3 = Control Setting 3 4 - 255 = Reserved

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1919.25	25	<b>Payload Control 3</b>	Unsigned 1	Enumerated	0 = No Control 1 = Control Setting 1 2 = Control Setting 2 3 = Control Setting 3 4 - 255 = Reserved
1919.26	26	<b>Payload Control 4</b>	Unsigned 1	Enumerated	0 = No Control 1 = Control Setting 1 2 = Control Setting 2 3 = Control Setting 3 4 = Control Setting 4 5 = Control Setting 5 6 = Control Setting 6 7 = Control Setting 7 8 = Control Setting 8 9 = Control Setting 9 10 = Control Setting 10 11 = Control Setting 11 12 = Control Setting 12 13 = Control Setting 13 14 = Control Setting 14 15 = Control Setting 15 16 - 255 = Reserved
1919.27	27	<b>Orbit Parameter 1</b>	Unsigned 1	Enumerated	0 = Option A 1 = Option B
1919.28	28	<b>Orbit Parameter 2</b>	Unsigned 1	Enumerated	0 = No Parameter Set 1 = Option A 2 = Option B 3 = Option C 4 = Option D 5 = Option E 6 = Option F 7 = Option G 8 - 255 = Reserved
1919.29	29	<b>Orbit Parameter 3</b>	Unsigned 1	Enumerated	0 = No Parameter Set 1 = Option A 2 = Option B 3 = Option C 4 = Option D 5 = Option E 6 = Option F 7 = Option G 8 - 255 = Reserved
1919.30	30	<b>Orbit Parameter 4</b>	Unsigned 1	Enumerated	0 = No Parameter Set 1 = Option A 2 = Option B 3 = Option C 4 = Option D 5 = Option E 6 = Option F 7 = Option G 8 - 255 = Reserved

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1919.31	31	Terminate Mode	Unsigned 1	Enumerated	0 = No Parameter Set 1 = Option A 2 = Option B 3 = Option C 4 = Option D 5 = Option E 6 = Option F 7 = Option G 8 - 255 = Reserved
1919.32	32	Orbit Altitude	Double	m	-500 ≤ x ≤ 16,777,000.0
1919.33	33	Loiter Time	Double	μs	0 ≤ x ≤ 2,400,000,000.0

**Table 4 - 154: Message #1919: Modify Loiter Status****4.1.10.49 Message #1920: GeoZone Status**

This message is the status message for GeoZone Control. GeoZone Status shall be sent to the CUCS upon receipt of a GeoZone Control message or the receipt of a Store Specific Information Request Message [DLI 0582]. If the triplet (Hardpoint ID, Carriage ID, and Store ID) is set to no selection (0, 0, 0), then the Weapon Package ID and Weapon Package Firing Order are used to select the store.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1920.01	1	Time Stamp	Double	s	Refer to Section 1.7.2
1920.02	2	Vehicle ID	Integer 4	None	Refer to Section 1.7.5
1920.03	3	CUCS ID	Integer 4	None	Refer to Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1920.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1920.05	5	Hardpoint ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Hdp #1 0x00000002 = Hdp #2 0x00000004 = Hdp #3 0x00000008 = Hdp #4 0x00000010 = Hdp #5 0x00000020 = Hdp #6 0x00000040 = Hdp #7 0x00000080 = Hdp #8 0x00000100 = Hdp #9 0x00000200 = Hdp #10 0x00000400 = Hdp #11 0x00000800 = Hdp #12 0x00001000 = Hdp #13 0x00002000 = Hdp #14 0x00004000 = Hdp #15 0x00008000 = Hdp #16 0x00010000 = Hdp #17 0x00020000 = Hdp #18 0x00040000 = Hdp #19 0x00080000 = Hdp #20 0x00100000 = Hdp #21 0x00200000 = Hdp #22 0x00400000 = Hdp #23 0x00800000 = Hdp #24 0x01000000 = Hdp #25 0x02000000 = Hdp #26 0x04000000 = Hdp #27 0x08000000 = Hdp #28 0x10000000 = Hdp #29 0x20000000 = Hdp #30 0x40000000 = Hdp #31 0x80000000 = Hdp #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1920.06	6	Carriage ID	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Crg #1 0x00000002 = Crg #2 0x00000004 = Crg #3 0x00000008 = Crg #4 0x00000010 = Crg #5 0x00000020 = Crg #6 0x00000040 = Crg #7 0x00000080 = Crg #8 0x00000100 = Crg #9 0x00000200 = Crg #10 0x00000400 = Crg #11 0x00000800 = Crg #12 0x00001000 = Crg #13 0x00002000 = Crg #14 0x00004000 = Crg #15 0x00008000 = Crg #16 0x00010000 = Crg #17 0x00020000 = Crg #18 0x00040000 = Crg #19 0x00080000 = Crg #20 0x00100000 = Crg #21 0x00200000 = Crg #22 0x00400000 = Crg #23 0x00800000 = Crg #24 0x01000000 = Crg #25 0x02000000 = Crg #26 0x04000000 = Crg #27 0x08000000 = Crg #28 0x10000000 = Crg #29 0x20000000 = Crg #30 0x40000000 = Crg #31 0x80000000 = Crg #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1920.07	7	<b>Store ID</b>	Unsigned 4	Bitmapped	0x00000000 = No Selection 0x00000001 = Str #1 0x00000002 = Str #2 0x00000004 = Str #3 0x00000008 = Str #4 0x00000010 = Str #5 0x00000020 = Str #6 0x00000040 = Str #7 0x00000080 = Str #8 0x00000100 = Str #9 0x00000200 = Str #10 0x00000400 = Str #11 0x00000800 = Str #12 0x00001000 = Str #13 0x00002000 = Str #14 0x00004000 = Str #15 0x00008000 = Str #16 0x00010000 = Str #17 0x00020000 = Str #18 0x00040000 = Str #19 0x00080000 = Str #20 0x00100000 = Str #21 0x00200000 = Str #22 0x00400000 = Str #23 0x00800000 = Str #24 0x01000000 = Str #25 0x02000000 = Str #26 0x04000000 = Str #27 0x08000000 = Str #28 0x10000000 = Str #29 0x20000000 = Str #30 0x40000000 = Str #31 0x80000000 = Str #32
1920.08	8	<b>Weapon Package ID</b>  A value of "255" selects the default weapon package.	Unsigned 1	None	1 ≤ x
1920.09	9	<b>Weapon Package Firing Order</b>	Unsigned 1	None	1 ≤ x
1920.10	10	<b>Auto Abort on Zone</b>	Unsigned 1	Enumerated	0 = Default (No Operation) 1 = Abort Mission Upon Entering An Enabled Exclusion GeoZone 2 - 255 = Reserved
1920.11	11	<b>Disable All GeoZones</b>	Unsigned 1	Enumerated	0 = Default (No Operation) 1 = Disables all exclusion and engagement GeoZones 2 - 255 = Reserved
1920.12	12	<b>Exclusion Zone Overflight Enable</b>	Unsigned 1	Enumerated	0 = Default 1 = Enables flight through but not impact within all enabled exclusion GeoZones 2 - 255 = Reserved

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1920.13	13	<b>Disable All Exclusion Zones</b>	Unsigned 1	Enumerated	0 = Default (No Operation) 1 = Disables all exclusion GeoZones 2 - 255 = Reserved
1920.14	14	<b>Disable All Engagement Zones</b>	Unsigned 1	Enumerated	0 = Default (No Operation) 1 = Disables all engagement GeoZones 2 - 255 = Reserved
1920.15	15	<b>Erase Selected GeoZone</b>	Unsigned 1	Enumerated	0 = Default (No Operation) 1 = Erase the GeoZone specified by GeoZone Reference Number 2 = Erase the GeoZone specified by Grid Label 3 - 255 = Reserved
1920.16	16	<b>Edit Selected GeoZone</b>	Unsigned 1	Enumerated	0 = Default (No Operation) 1 = Replace or add the GeoZone specified by GeoZone Reference Number 2 = Replace or add the GeoZone specified by Grid Label 3 - 255 = Reserved
1920.17	17	<b>Query Selected GeoZone</b>  Specifies the GeoZone data, loaded into mission store memory, that the mission store is to provide in subsequent GeoZone Status message data words.	Unsigned 1	Enumerated	0 = Default (No Operation) 1 = Provide the GeoZone data specified by GeoZone Reference Number in GeoZone Monitor 2 = Provide the GeoZone data specified by Grid Lab: Characters 1-4 in GeoZone Status 3 = Provide GeoZone data in GeoZone Monitor applicable to the first GeoZone Reference Number of the Exclusion GeoZone that is the cause of the GeoZone Violation, if GeoZone Violation Type > 0. 4 - 255 = Reserved
1920.18	18	<b>GeoZone Reference Number</b>  Identifies each GeoZone with a unique reference number.	Unsigned 4	None	No Restrictions
1920.19	19	<b>Grid Label</b>	Character 5	None	No Restrictions
1920.20	20	<b>Point Type</b>	Unsigned 1	None	No Restrictions
1920.21	21	<b>Point Amplification</b>	Unsigned 1	None	No Restrictions

Unique ID	Field	Data Element Name & Description	Type	Units	Range												
1920.22	22	<b>Point/Line/Area Continuation</b>	Unsigned 1	Enumerated	0 = Default (No Operation) 1 = Indicates that the line/area data in the current GeoZone Control message is a continuation of the line/area data defined in the previous GeoZone Control message(s)												
1920.23	23	<b>Point/Line/Area Descriptor</b>  Defines whether the GeoZone Control/Status message contains a point, single point area, a multi-point line or multi-point area.	Unsigned 1	Enumerated	0 = Point 1 = Control Setting 1 2 = Control Setting 2 3 = Control Setting 3 4 - 255 = Reserved												
1920.24	24	<b>Square/Circle Switch</b>  If the GeoZone is not a grid and is set to a single Point Area, then this word defines whether the GeoZone is a square/rectangle or circle/ellipse.	Unsigned 1	Enumerated	0 = Not Applicable 1 = Square/Rectangle (if Area Major Axis is equal to Area Minor Axis then Single Point Area is a square, else it is a rectangle) 2 = Circle/Ellipse (if Area Major Axis is equal to Area Minor Axis then Single Point Area is a circle, else it is an ellipse) 3 - 255 = Reserved												
1920.25	25	<b>End Point Control</b>  Defines whether Point 1 or Point 2 or neither is an endpoint.	Unsigned 1	Enumerated	0 = No End Point 1 = Point 1 is an Endpoint 2 = Point 2 is an Endpoint 3 - 255 = Reserved												
1920.26	26	<b>GeoZone Grid Switch</b>  Defines if the GeoZone referenced by this message is a grid or not.	Unsigned 1	Enumerated	0 = Default (not a grid) 1 = GeoZone is a grid 2 - 255 = Reserved												
1920.27	27	<b>Grid Scale</b>  Defines the grid size for the GeoZone. Grid dimensions are in minutes.  <table border="1"> <tr> <th>Grid</th><th>Cell Size</th><th>Sector Size</th><th>Quad Size</th></tr> <tr> <td>Type 1</td><td>30x30</td><td>10x10</td><td>5x5</td></tr> <tr> <td>Type 2</td><td>60x60</td><td>20x20</td><td>10x10</td></tr> </table>	Grid	Cell Size	Sector Size	Quad Size	Type 1	30x30	10x10	5x5	Type 2	60x60	20x20	10x10	Unsigned 1	Enumerated	0 = Type 1 Grid 1 = Type 2 Grid 2 - 255 = Reserved
Grid	Cell Size	Sector Size	Quad Size														
Type 1	30x30	10x10	5x5														
Type 2	60x60	20x20	10x10														

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1920.28	28	<b>Time Function</b> Describes how the time in Hour and Minute words are used in the current GeoZone message. Times are referenced to 0000 hours GMT, except for moving GeoZones, where the reference time specifies the time when the moving GeoZone was at the geographic location specified by Reference Point Location (Unique ID#s 1920.31 - 1920.33).	Unsigned 1	Enumerated	0 = Default (Time parameters are not used) 1 = Activation Time 2 = Deactivation Time 3 = Arrival Time 4 = Departure Time 5 = Time Point Established 6 = Non-Operational Time 7 = Operational Time 8 - 255 = Reserved
1920.29	29	<b>Hour</b>	Unsigned 1	h	$x \leq 23$ (Legal Values) $24 \leq x$ (Illegal Values)
1920.30	30	<b>Minute</b>	Unsigned 1	min	$x \leq 59$ (Legal Values) $60 \leq x$ (Illegal Values)
1920.31	31	<b>Reference Point Latitude</b>	Double	rad	$-\pi/2 \leq x \leq \pi/2$
1920.32	32	<b>Reference Point Longitude</b>	Double	rad	$-\pi \leq x \leq \pi$
1920.33	33	<b>Reference Point Altitude</b>	Double	m	$-16,777,000.0 \leq x \leq 16,777,000.0$
1920.34	34	<b>Zone Maximum Altitude</b> The maximum altitude of the top of the GeoZone.	Double	m	$-16,777,000.0 \leq x \leq 16,777,000.0$
1920.35	35	<b>GeoZone Velocity North</b> Defines the North component of the velocity of a moving GeoZone. Referenced to True North.	Double	m/s	$x = 0$ (No movement) $0 < x$ (if traveling from south to north) $x < 0$ (if traveling from north to south)
1920.36	36	<b>GeoZone Velocity East</b> Defines the East component of the velocity of a moving GeoZone. Referenced to True East.	Double	m/s	$x = 0$ (No movement) $0 < x$ (if traveling from west to east) $x < 0$ (if traveling from east to west)
1920.37	37	<b>Area Axis Orientation</b> Orientation of the Area Major Axis with respect to True North.	Double	rad	$-\pi \leq x \leq \pi$
1920.38	38	<b>Area Major Axis</b> GeoZone major axis length.	Double	m	$-16,383 \leq x \leq 16,383$
1920.39	39	<b>Area Minor Axis</b> GeoZone minor axis length.	Double	m	$-16,383 \leq x \leq 16,383$
1920.40	40	<b>Point 1 Offset North</b> Offset to Reference Point Latitude (Unique ID #1920.31).	Double	m	$-16,383 \leq x \leq 16,383$

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1920.41	41	<b>Point 1 Offset East</b> Offset to Reference Point Longitude (Unique ID #1920.32).	Double	m	-16,383 ≤ x ≤ 16,383
1920.42	42	<b>Point 1 Offset Down</b> Offset to Reference Point Altitude (Unique ID #1920.33).	Double	m	-16,383 ≤ x ≤ 16,383
1920.43	43	<b>Point 2 Offset North</b> Offset to Reference Point Latitude (Unique ID #1920.31).	Double	m	-16,383 ≤ x ≤ 16,383
1920.44	44	<b>Point 2 Offset East</b> Offset to Reference Point Longitude (Unique ID #1920.32).	Double	m	-16,383 ≤ x ≤ 16,383
1920.45	45	<b>Point 2 Offset Down</b> Offset to Reference Point Altitude (Unique ID #1920.33).	Double	m	-16,383 ≤ x ≤ 16,383

**Table 4 - 155: Message #1920: GeoZone Status****4.1.10.50 Message #1924: Key Status**

This message shall acknowledge receipt of Message #1816 (Publish Key) and Message #1808 (Weapon Fire Control) [DLI 0583].

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1924.01	1	<b>Time Stamp</b>	Double	s	Refer to Section 1.7.2
1924.02	2	<b>Vehicle ID</b>	Integer 4	None	Refer to Section 1.7.5
1924.03	3	<b>CUCS ID</b>	Integer 4	None	Refer to Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1924.04	4	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
1924.05	5	<b>Keyed Quantity</b>	Unsigned 1	Enumerated	0 = Fire Request Key 1 = Master Arm Request Key 2 = Jettison Request Key 3 - 254 = Weapon Specific 255 = All
1924.06	6	<b>Key Validity</b>	Unsigned 1	Enumerated	0 = False 1 = True
1924.07	7	<b>Key Value</b>	Unsigned 4	None	No Restrictions
1924.08	8	<b>Safety Critical Command Minimum Message Count</b>  If Unique ID #1924.10 is non-zero, then this field does not apply to Master Arm (#1806).	Unsigned 1	None	1<= X
1924.09	9	<b>Safety Critical Command Message Sequence Maximum Time Limit</b>  If Unique ID #1924.10 is non-zero, then this field does not apply to Master Arm (#1806).	Unsigned 2	s	No Restrictions

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1924.10	10	<b>Minimum Master Arm Heartbeat Rate</b>  Use of 0 Hz indicates alternate action Master Arm.	Float	Hz	x < 0 (Error) 0 ≤ x

**Table 4 - 156: Message #1924: Key Status****4.1.10.51 Message 1925: Store Specific Information Response**

This message is transmitted directly based on a specific query or as a consequence of behavior based sequencing. The message shall indicate the number of store-specific response messages that are to follow [DLI 0584]. These child messages are keyed by the data element Request ID. The following messages will trigger a Store Specific Information Response message:

- Store Specific Information Request (Message #1800)

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1925.01	1	<b>Time Stamp</b>	Double	s	Refer to Section 1.7.2
1925.02	2	<b>Vehicle ID</b>	Integer 4	None	Refer to Section 1.7.5
1925.03	3	<b>CUCS ID</b>	Integer 4	None	Refer to Section 1.7.5
1925.04	4	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1925.05	5	<b>Request ID</b> Unique Identifier for the resulting sequence of messages. Unique for the mission.	Unsigned 1	None	1 ≤ x
1925.06	6	<b>Message Type</b> Any weapon-specific message that addresses a specific store.	Unsigned 4	Enumerated	1901 = Message #1901 1903 = Message #1903 1904 = Message #1904 1907 = Message #1907 1908 = Message #1908 1911 = Message #1911 1912 = Message #1912 1913 = Message #1913 1914 = Message #1914 1915 = Message #1915 1916 = Message #1916 1917 = Message #1917 1919 = Message #1919 1920 = Message #1920 1922 = Message #1922
1925.07	7	<b>Number of Stores</b>	Unsigned 1	None	1 ≤ x

**Table 4 - 157: Message #1925: Store Specific Information Response****4.1.10.52 Message #1926: CUCS Load Out Configuration**

This message shall be used by the UA during the discovery and configuration process to transfer the load out identifier to the Gaining CUCS [DLI 0585]. This file name is used by the CUCS to fetch weapon load out information.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1926.01	1	<b>Time Stamp</b>	Double	s	Refer to Section 1.7.2
1926.02	2	<b>Vehicle ID</b>	Integer 4	None	Refer to Section 1.7.5
1926.03	3	<b>CUCS ID</b>	Integer 4	None	Refer to Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1926.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
1926.05	5	Load Out ID	Character 128	None	No Restrictions

**Table 4 - 158: Message #1926: CUCS Load Out Configuration****4.1.10.53 Message #1927: SMS Secondary Status**

This message shall carry information that will be needed at a lower rate than the SMS Primary Status [DLI 0586]. This message is sent from the UA and is transmitted asynchronously as a response to a command or query issued by the CUCS. SMS Secondary Status responds to the following messages:

- Build Store Inventory (#1802)
- Primary Store Control (#1803)

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1927.01	1	Time Stamp	Double	s	Refer to Section 1.7.2
1927.02	2	Vehicle ID	Integer 4	None	Refer to Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1927.03	3	CUCS ID	Integer 4	None	Refer to Section 1.7.5
1927.04	4	Station Number	Unsigned 4	Bitmapped	0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
1927.05	5	SMS CBIT Status	Unsigned 1	Enumerated	0 = Untested 1 = Failed 2 = Passed 3 - 15 = Reserved 16 - 255 = Weapon Specific
1927.06	6	PBIT Status	Unsigned 1	Enumerated	0 = Untested 1 = Failed 2 = Passed 3 - 15 = Reserved 16 - 255 = Weapon Specific
1927.07	7	Mission Plan Status	Unsigned 1	Enumerated	0 = Unloaded 1 = Corrupt 2 = Valid 3 - 15 = Reserved 16 - 255 = Weapon Specific
1927.08	8	Maintenance Inhibit	Unsigned 1	Enumerated	0 = In Maintenance Mode 1 = Not In Maintenance Mode 2 - 255 = Reserved

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1927.09	9	<b>Navigation Position Data Status</b>	Unsigned 1	Enumerated	0 = No Message 1 = Message Valid 2 - 255 = Reserved
1927.10	10	<b>Navigation Time Data Status</b>	Unsigned 1	Enumerated	0 = No Message 1 = Message Valid 2 - 255 = Reserved
1927.11	11	<b>Navigation Environmental Data Status</b>	Unsigned 1	Enumerated	0 = No Message 1 = Message Valid 2 - 255 = Reserved
1927.12	12	<b>SMS Temperature</b>	Integer 1	°C	No Restrictions
1927.13	13	<b>SMS BIT Status A</b>	Unsigned 1	Enumerated	0 = BIT Fail 1 = BIT Pass 2 - 255 = Reserved
1927.14	14	<b>SMS BIT Status B</b>	Unsigned 1	Enumerated	0 = BIT Fail 1 = BIT Pass 2 - 255 = Reserved
1927.15	15	<b>SMS BIT Status C</b>	Unsigned 1	Enumerated	0 = BIT Fail 1 = BIT Pass 2 - 255 = Reserved
1927.16	16	<b>SMS BIT Status D</b>	Unsigned 1	Enumerated	0 = BIT Fail 1 = BIT Pass 2 - 255 = Reserved
1927.17	17	<b>SMS BIT Status E</b>	Unsigned 1	Enumerated	0 = BIT Fail 1 = BIT Pass 2 - 255 = Reserved
1927.18	18	<b>SMS BIT Status F</b>	Unsigned 1	Enumerated	0 = BIT Fail 1 = BIT Pass 2 - 255 = Reserved
1927.19	19	<b>SMS BIT Status G</b>	Unsigned 1	Enumerated	0 = BIT Fail 1 = BIT Pass 2 - 255 = Reserved
1927.20	20	<b>SMS BIT Status H</b>	Unsigned 1	Enumerated	0 = BIT Fail 1 = BIT Pass 2 - 255 = Reserved

**Table 4 - 159: SMS Secondary Status**

#### 4.2 Vehicle and Payload Specific Message Formats

1. Section 4.1 defines the generic message types common to all compliant systems. Vehicle and payload specific messages may be formatted in a manner determined by the designers of the VSM using any of the vehicle specific services defined in Section 1.7.4.1, Vehicle Specific Display Services. The VSM shall support the formatted DLI messages where they are applicable to the UA which it supports [DLI 0328].
2. The CUCS shall provide the services for displaying vehicle or payload specific data, and for interpreting and displaying the information appropriately (such as in a browser window) [DLI 0329]. In all cases, vehicle or payload specific displays created at the CUCS using such messaging shall be compliant with Chapter 6 (HCI) [DLI 0330].
3. Vehicle and payload specific messaging shall use ports configured for either TCP/IP or UDP/IP communications [DLI 0331]. In general, it is anticipated that TCP communications will be commonly used for generating display information using commonly employed GUI support

tools that require TCP support. However, some vehicle or payload-specific applications may require the support for streaming ephemeral data for which UDP is preferable.

4. General Configuration Messages may be used to configure private messages as well as the DLI defined messages.

## 5 MISCELLANEOUS INTERFACES

### 5.1 ANALOGUE VIDEO INTERFACE

Interfaces for analogue video lie outside the scope of the DLI. In cases where video data is transmitted to the ground in analogue format, the VSM shall provide services to translate video into digital form consistent with STANAG 4609, 4545, or 7023 for transport across the DLI [DLI 0332]. Where desired, the VSM may provide an analogue output port for exporting analogue video (e.g., RS-170 format) to displays or other nodes. If displays at the operator station require analogue input, a separate channel may be established between the CUCS and VSM to transmit the data directly.

### 5.2 DIGITAL IMAGE DATA INTERFACE

1. Digital payload data (still digital imagery, full motion digital imagery, SAR imagery, etc.) shall enter the CUCS via the DLI interface [DLI 0333]. Digital payload data shall be transferred to the CUCS using established NATO standards (STANAGs 7023, 4609, 4545, 4607, as specified in Chapter 3) for both communication protocol and physical medium [DLI 0334].
2. If bandwidth constraints permit, a physical interface between the CUCS and the VSM can be shared for digital payload data and Command and Status data. Where bandwidth requirements exceed capabilities of the Core-to-VSM physical interface, a separate physical interface (e.g., a second Ethernet port) shall be established for transfer of digital payload data [DLI 0335].
3. Where necessary to satisfy system requirements, the CUCS shall provide the functionality to annotate, display, and distribute digital payload data [DLI 0336]. The UCS Core shall also provide any necessary functionality to store, retrieve, and display digital payload data [DLI 0337].
4. Any payload-specific metadata that is associated with the digital payload data shall be published on the same interface as the payload data in accordance with applicable NATO standards [DLI 0338]. The metadata and payload data should be time tagged, and share a common time reference. The resolution of the time tag shall be sufficient to fully exploit the payload data [DLI 0339]. The contents of the metadata shall be sufficient to process the payload data in downstream processes [DLI 0340].
5. Digital motion imagery in MPEG-2 format shall be in accordance with STANAG 4609 [DLI 0341].

**Attachment 4 - 1: Modified DLI Generic Messages and Private Message Repository for UVs – AEP-84 Volume I**

These “non required” Private Messages are available to assist users in UAS as well as other UV platforms. The Summary Table lists all captured messages received from CST members. The actual messages are found in the following UV Type Tables. Due to the fact that some messages can be used for multi-types of UVs, the CST Editor placed individual messages in a suggested UV Type Table which seemed most appropriate. An “X” in one of the last 4 columns in the Summary Table designates the location of the actual messages in the UV Type Tables below. A “\*” in one of the last 4 columns designates that the message may be applicable for that UV type.

**Summary Table**

Msg #	Description	Push/Pull	Source	Allowable Max Latency (msec)	UA Table	USV Table	UUSV Table	UGV Table
2,000	IP Address and Port Assignment Request	Push	CUCS	2000	*	X	*	*
2,001	UA IP Disclosure Message	Push/Pull	VSM	2000	*	X	*	*

**Table 4 - 160: Summary Table**

## 1.0 UA GROUP MESSAGES

### 1.1 MESSAGE #2000: IP ADDRESS AND PORT ASSIGNMENT REQUEST

This message shall be sent by the CUCS to a CDT or UA to request a change in the IP address and/or port used by the CDT or AV. If the receiving CDT or UA accepts the requested change, it will update Message #540 with the new configuration. The CDT/UA may reject the request if certain criteria are not met. If this message is accepted, all previous stream definitions are deleted and replaced by those in this message.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
2000.01	1	Time Stamp	Double	s	See Section 1.7.2
2000.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
2000.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
2000.04	4	Data Link ID	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
2000.05	5	<b>Controlled Station</b>	Unsigned 4	Bitmapped	0x00000000 = UA Platform (Does not include Payload Stations) 0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
2000.06	6	<b>Stream ID</b>	Unsigned 1	None	No Restrictions
2000.07	7	<b>New IP Address Assignment</b>	Unsigned 4	None	No Restrictions
2000.08	8	<b>New Port Assignment</b>	Unsigned 2	None	No Restrictions

**Table 4 - 161: Message #2000: IP Address and Port Assignment Request**

## 1.2 MESSAGE #2001: UA IP DISCLOSURE MESSAGE

1. This message shall be sent by the UA to inform a CUCS of the data streams in the data uplink and downlink. The primary goal is to inform the receiving entity of what is present in the UA uplink and downlink and how to connect to those streams. Those streams include, but are not limited to, bidirectional DLI, bidirectional audio and unidirectional payload data.
2. This message shall be sent from the UA on a universal multicast IP address and port (e.g. 225.200.1.0:51017). It shall be sent once for each stream since a station (or the UA) may have multiple streams available.
3. This message shall be sent by the Control Data Link (CDT) to inform the local controlling processor (e.g. CUCS) of the DLI data streams used to control the CDT. This message will also indicate the IP routing the CDT will use to send/receive non-CDT data

to/from the AV. Those non-CDT data streams include, but are not limited to, bidirectional DLI for the UA and VDT, bidirectional audio and unidirectional payload data.

4. This message shall be sent by the CDT on a different universal multicast IP address and port than used by the UA (x.x.x.x:x).

5. Additional detail on the streams will have to be pulled from the streams themselves (e.g., the KLV portion of the video downlink streams).

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
2001.01	1	Time Stamp	Double	s	See Section 1.7.2
2001.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
2001.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
2001.04	4	Data Link ID	Integer 4	None	See Section 1.7.5
2001.05	5	Controlled Station	Unsigned 4	Bitmapped	0x00000000 = UA Platform (Does not include Payload Stations) 0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
2001.06	6	Stream ID	Unsigned 1	None	No Restrictions

Unique ID	Field	Data Element Name & Description	Type	Units	Range
2001.07	7	<b>Stream N Type</b>	Unsigned 1	Enumerated	0 = UA DLI Uplink 1 = UA DLI Downlink 2 = Data Link DLI Uplink 3 = Data Link DLI Downlink 4 = EO or IR Payload Full Motion Video (FMV) (live, from this UA) 5 = EO Payload Full Motion Video (FMV) (live, from this UA) 6 = IR Payload Full Motion Video (FMV) (live, from this UA) 7 = EO/IR Stills (WAS or other, from this UA) 8 = SAR Stills (from this UA) 9 = GMTI (live, from this UA) 10 = Pilot View Camera FMV (live, from this UA) 11 = ATC Audio - Uplink 12 = ATC Audio - Downlink 13 = Tactical Audio - Uplink 14 = Tactical Audio - Downlink 15 = Tactical Comm Relay (non-audio/wide distribution) 16 = Relayed UA DLI Uplink (live, but relayed through this UA) 17 = Relayed UA DLI Downlink (live, but relayed through this UA) 18 = Relayed EO or IR Payload Full Motion Video (FMV) (live, but relayed through this UA) 19 = Relayed EO Payload Full Motion Video (FMV) (live, but relayed through this UA) 20 = Relayed IR Payload Full Motion Video (FMV) (live, but relayed through this UA) 21 = Relayed EO/IR Stills (WAS or other, live, but relayed through this UA) 22 = Relayed SAR Stills (live, but relayed through this UA) 23 = Relayed GMTI (live, but relayed through this UA) 24 = Relayed Pilot View Camera FMV (live, but relayed through this UA) 25 = EO/IR FMV (stored/replayed) 26 = CBRNE Data 27 = SIGINT Data 28 = SAR FMV (live, from this UA) 29 = SAR FMV Relay (live, but relayed through this UA) 30 - 36 = Reserved 37 - 255 = System Specific
2001.08	8	<b>Length of URI</b>	Unsigned 1	None	$1 \leq x$
2001.09	9	<b>Uniform Resource Identifier</b>	Character ["Length of URI"]	None	No Restrictions

**Table 4 - 162: Message #2001: UA IP Disclosure Message**

6. Note Regarding Implementation: This message provides a method for a CUCS to determine the IP address and IP port used to transmit information to/from the AV. While most of the items defined are data streams on the downlink, there are a few that also define the IP address/port the UA expects to receive data, e.g. ATC Uplink Audio. This message also defines the multicast IP address used for the DLI messages to both the UA and Data Link. If this message is sent on a universal IP Address/port, then each UA and Data link can have its own multicast address/port for the remaining DLI messages.

7. Note for 2001.05: If a range restriction is provided for only a single edge of a message field then the other edge value shall be the maximum or minimum value that can be contained by the field based on its type.

For example, a field of type “Unsigned 1” with a range restriction of “ $1 \leq x$ ” would have a maximum value of 255 and a field of type “Unsigned 1” with a range restriction of “ $x \leq 254$ ” would have a minimum value of 0.

**Attachment 4 - 2: US Army Category 2 Private Messages**

1. The purpose of the U.S. Army Unmanned Aircraft Systems Project Office (UAS PO) Private Messages Interface Control Document (PM ICD) is to compile all U.S. Army Private Messages into a central location. With the permission from CDL Systems, Ltd, the baseline document is the CDL VCS-4586 Private Messages ICD. UAS PO recognizes the efforts of CDL Systems, Ltd., and their contribution to the development of this document.
2. Private messages in the Army UAS PM CSI context will be published and distributed to the Army UAS stakeholder community without proprietary markings. A private message that cannot meet this distribution will not be used for LOI 2, 3, or 4 operations.
3. The US Army Private Messages can be viewed in the embedded file below titled "Private Messages Interface Control Document (PM ICD) for Category 2 Messages V3.1 dated 31 March 2015.



**Attachment 4 - 3: Generic Product Transport****1. INTRODUCTION**

1. Many standards exists in the public and military domain that define various sensor product structures; however, there seems to be a gap when it comes to finding a generic transport mechanism using UDP (User Datagram Protocol) to transport sensor product data that is not in the form of a data stream<sup>1</sup> and especially when the sensor product is on demand or event based.
2. To address this gap, this section will detail a simple protocol that leverages STANAG 4586 to provide a transport mechanism for payloads that lack this capability.
3. Please note that this section uses the CBRN domain to illustrate the concept, however, the concept is generic by design and is intended to support many other domains as required such as weapons locating systems, etc.

**2. ASSUMPTIONS AND CONSTRAINTS**

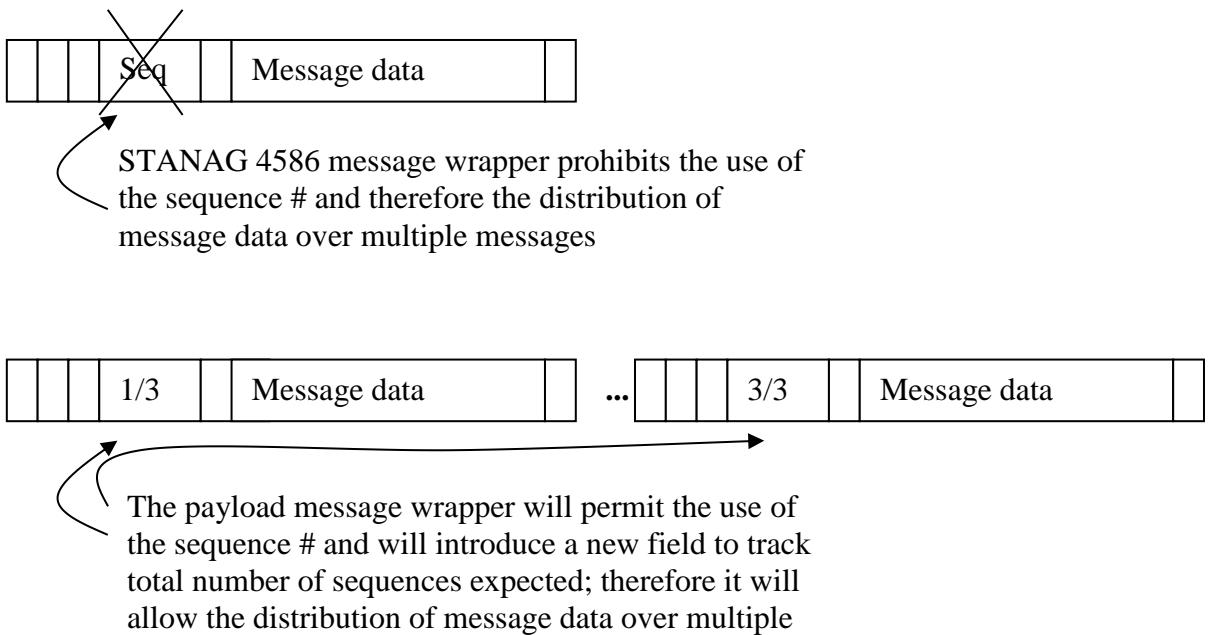
1. Implementation of this protocol requires adherence to STANAG 4586 specifically regarding the use of UDP and Message Handling Approach (Chapter 3 Section 3.3).
2. In the case of conflicting or unclear requirements, please note that STANAG 4586, would take precedence, unless explicitly instructed in this section to provide a different implementation than that of STANAG 4586.

**3. CONCEPT.****3.1 DATA DISTRIBUTION OVER MULTIPLE MESSAGES.**

1. This standard adopts and modifies the STANAG 4586 Message Wrapper which will then permit sensor product data, that is stored in Message Data (see Section 4.1), to be distributed over multiple messages in order to overcome the limitation regarding message size, for more information see Section 0. For the remainder of this section this new message wrapper will be referred to as the 'Payload Message Wrapper'.
2. Figure 4 – 16 depicts the differences between the STANAG 4586 wrapper and the Payload Message Wrapper using, as an example, a sensor product that requires 3 messages to be delivered.

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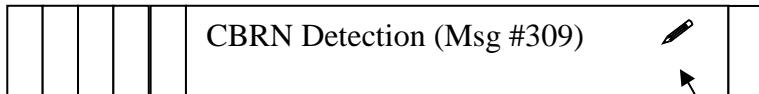
<sup>1</sup> Many standards already exists for streaming voice and video



**Figure 4 - 16: Distribution of Message Data Over Multiple Messages**

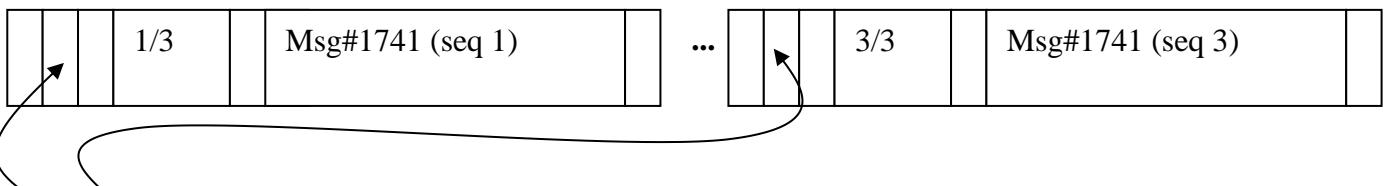
### 3.2 LINKAGE TO STANAG 4586 MESSAGES

1. Systems that use STANAG 4586 for sensor integration and control and that lack a transport mechanism for some of their sensor product data can use the Generic Product Transport to transport such product data. To this end, a payload message should be defined in STANAG 4586 that will contain a reference to the product data message. Specifically, the STANAG 4586 product message shall reference the Message Instance Identifier from the Generic Product Transport message (see Section 0 for more information).
2. For example, CBRN sensors define a CBRN Detection Message (Message #309), where field number 11 'CBRN4 Report Reference' shall be set to the Message Instance Identifier of the Generic Transport Message #1741 ATP-45 (E) CBRN4 txt message (see Figure 4 – 17).

**STANAG 4586 Message**

Field number 11 of STANAG 4586 CBRN Detection Message (Message #309) shall be set to the Message Instance Identifier of the payload product message.

Example '123456'

**Generic Product Transport Message**

Message Instance Identifier for payload message set to '123456'

**Figure 4 - 17: CBRN Example of How to Link to STANAG 4586 Messages**

3. From a message sequencing perspective, and continuing with the CBRN example above, the VSM will send the STANAG 4586 CBRN Detection Message #309 (sent on demand or event based) in addition to the Generic Product Transport Message #1741 CBRN4 Messages (3 messages in this case).

4. Note that for the CBRN domain, and specifically in the case of a detection, the CUCS will be required to acknowledge the receipt of the STANAG 4586 CBRN Detection Message (Message #309) by sending the VSM a Message #1400 Message Acknowledgment before sending the Generic Product Transport Message #1741. This acknowledgment is a confirmation to the VSM that the alarm message was not lost and that the CUCS is available and ready to receive the alarm payload product, see STANAG 4586 CBRN Detection Message (Message #309) for more details.

5. If the CUCS does not receive the product (i.e., the CBRN4 in Message #1741) correctly and in full then it shall send the VSM a Generic Information Request by Sequence (Message #1700) to request the resending of one or more message sequences that were never received by the CUCS or were received but were corrupted for example. Please refer to the Generic Information Request by Sequence (Message #1700) for more details.

6. The STANAG 4586 traffic and the Generic Product Transport traffic may use the same UDP multicast address and port number or they may be setup to use separate ones.

<b>STANAG 4586 traffic</b>		<b>Generic Product Transport traffic</b>	
<b>CUCS</b>	<b>VSM</b>	<b>CUCS</b>	<b>VSM</b>
...	...	...	...
	<- Message #309: CBRN Detection Message		
Message #1400: Message Acknowledgment <sup>2</sup> ->			<- Message #1741: CBRN4 (seq 1)
			<- Message #1741: CBRN4 (seq 2)
			<- Message #1741: CBRN4 (seq 3)
...	...	...	...

**Figure 4 - 18: Message Sequences Between the CUCS and VSM**

<sup>2</sup> To acknowledge the receipt of the CBRN Detection Message (STANAG 4586 message) only

## 4. MESSAGE HANDLING APPROACH.

### 4.1 MESSAGE WRAPPER INFORMATION.

Each message shall use the message wrapper structure defined in Figure 4 - 19. This message structure is based on STANAG 4586 message structure with a few modifications (highlighted in bold/italics). For more information see Chapter 3 Section 3.3.

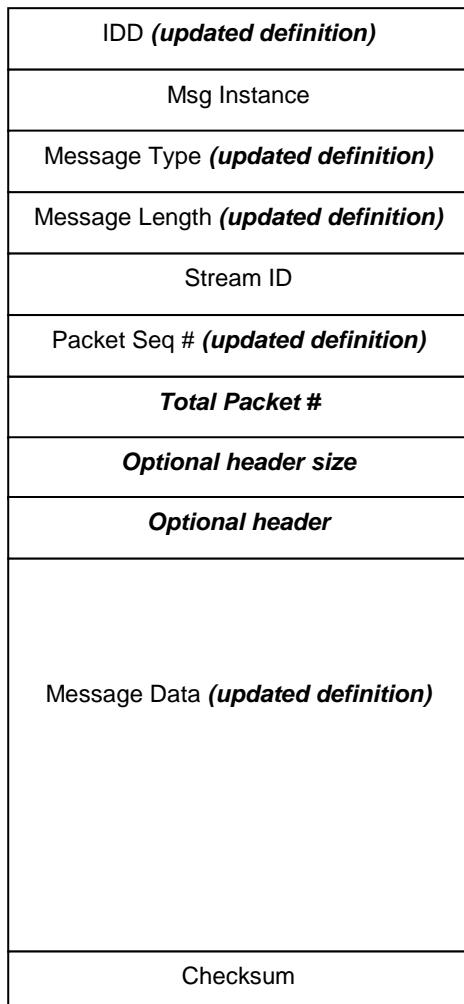


Figure 4 - 19: Payload Message Wrapper Structure

### 4.2 INTERFACE DEFINITION DOCUMENT (IDD) VERSION

1. See STANAG 4586, Chapter 3 Section 3, for basic definition.
2. Table 4 – 3 in STANAG 4586 contains the version numbers for STANAG 4586 message wrapper. The following table contains the version number(s) that are to be adopted for messages using the Payload Message Wrapper.

Generic Product Transport Document Version	IDD Version Identification
Draft	"GPT1.0"
<b>Edition 2 Version 3</b>	"GPT1.1"
<b>Edition 2 Version 4</b>	"GPT1.2"
<b>Edition 4, AEP-84 Volume I Edition A Version 1</b>	"GPT1.2"

**Table 4 - 163: Version Numbers****4.3 MESSAGE INSTANCE IDENTIFIER**

1. See STANAG 4586, Chapter 3 Section 3.3, for basic definition. 4 byte unsigned integer.
2. Message Instance Identifier must be unique (across the network) and when combined with fields Packet Sequence Number and Total Packet Numbers, it will aid in assembling a sensor product from multiple messages.
3. The Message Instance Identifier will also be used to link the STANAG 4586 traffic and the Generic Product Transport traffic as described in Section 3.2.

**4.4 MESSAGE TYPE**

1. See STANAG 4586, Chapter 3 Section 3, for basic definition. 4 byte unsigned integer.
2. The table below defines the message types for the Generic Product Transport. The STANAG 4586 concept of Vehicle Specific Messages (Private) shall also be supported where the Message Type numbers shall be between 2,000 and maximum integer.
3. Note: In the tables that follow, data types for non-private messages shall conform to the following meanings:
  - Byte (n) - Array of bytes, where n defines the size of the array
  - See STANAG 4586, Chapter 4, Section 4.1, bullet 19, for basic definition for the remaining data types for non-private messages

Msg #	Description	Push/Pull	Source	LOI			Allowable max latency (msec)
				2	3	4/5	
<b>General Messages</b>							
<b>1700</b>	<b>GPT Generic Information Request by Sequence Message</b>	Push	CUCS	Y	Y	-	2,000
<b>1701</b>	<b>GPT NACK Configuration</b>	Push/Pull	CUCS/VSM	Y	Y	-	2,000
<b>1702</b>	<b>GPT Message Transmission Latency</b>	Push/Pull	CUCS/VSM	Y	Y	-	2,000

<b>1703</b>	<b>GPT Abort Product Transmission</b>	Push/Pull	CUCS/VSM	Y	Y	-	2,000
<b>1704</b>	<b>GPT Pause Product Transmission</b>	Push/Pull	CUCS/VSM	Y	Y	-	2,000
<b>1705</b>	<b>GPT Resume Product Transmission</b>	Push/Pull	CUCS/VSM	Y	Y	-	2,000
<b>1706-1740</b>	<b>Reserved</b>						
<b>Payload Messages</b>							
<b>1741</b>	<b>ATP-45 (E) CBRN4</b>	Push/Pull	VSM	Y	Y	-	1,000
<b>1742</b>	<b>Log</b>	Pull	VSM	Y	Y	-	2,000
<b>1743</b>	<b>Radiological/Nuclear Detailed sensor measurement</b>	Pull	VSM	Y	Y	-	2,000
<b>1744</b>	<b>Chemical/Biological Detailed sensor measurement</b>	Pull	VSM	Y	Y	-	2,000
<b>1745 - 1799</b>	<b>Reserved</b>						
<b>Private Messages</b>							
<b>2000-Max int</b>	<b>VSM-Specific Private Message</b>	Push/Pull	VSM-Specific				1,000

**Table 4 - 164: Message Types for the Generic Product Transport**

#### 4.5 MESSAGE LENGTH

1. See AEP-84 Volume I for basic definition. 4 byte unsigned integer.
2. However, please note that for the messages defined in this standard will support MTU size of 1500 instead of just 576 bytes as defined by STANAG 4586 in Chapter 3 Section 3. Subtracting the IPv4 header size of 20 bytes and the UDP header size of 8 bytes as well as subtracting the message wrapper size of 294<sup>3</sup> bytes, gives 1178 bytes as the maximum guaranteed message length<sup>4</sup> of a single message with no room for another message in the datagram.

#### 4.6 STREAM ID

See STANAG 4586, Chapter 3 Section 3 for definition. 4 byte unsigned integer.

#### 4.7 PACKET SEQUENCE NUMBER

1. See STANAG 4586, Chapter 3 Section 3 for basic definition. 4 byte unsigned integer.
2. However, this field will be used by this standard and shall become mandatory. The Packet Sequence Number will be used to provide a means for segmenting the message data, used to carry the sensor product data, into one or more messages. This

<sup>3</sup> Assuming that an optional header of maximum size is declared.

<sup>4</sup> Or 1433 bytes as the maximum message data length assuming that the optional header size is zero.

number will indicate which sequence is currently at hand (see Figure 4 - 19). So when combined with fields Message Instance Identifier and Total Packet Numbers, it will aid in assembling a sensor product from multiple messages.

3. For example, message sequence set to 2 (Packet sequence Number) while Total Packet Numbers is set to 3 means that this is message sequence 2 out of 3 for a given sensor product message. So when the receiving system receives all 3 message sequences then it will have a single complete sensor product.

4. Note that the sequence number start index is 1.

#### **4.8 TOTAL PACKET NUMBERS**

1. The new field will be defined as a 4 byte unsigned integer field.

2. The Total Packet Numbers will be used to provide the total number of expected segments of message data. For example if a sensor product requires 3100 bytes, then divided by 1178 bytes will mean that 3 messages are required. Thus the Total Packet Numbers will be 3 (see Figure 4 - 19).

3. When combined with fields Message Instance Identifier and Packet Sequence Number, it will aid in assembling a sensor product from multiple messages.

#### **4.9 OPTIONAL HEADER SIZE (NEW)**

1. This new field will be used to indicate the size of the optional header. 1 byte unsigned integer field.

2. This field shall be set to zero when an optional header is not available.

#### **4.10 OPTIONAL HEADER (NEW)**

1. This new field will be used to define an optional custom header. The actual size of the optional header will depend on the declared Optional Header Size. Min size is 0 bytes and Max size is 255 bytes.

2. This field will be 0 bytes (i.e., will not physically exist) if the Optional Header Size field is set to zero.

3. The optional header will follow a Tag-Length-Value structure as follows:

##### **4.10.1 Tag**

Defines a key much like a key in a standard hash-table data structure. 1 byte.

##### **4.10.2 Length**

Defines how many bytes follow the length field and make up the Value portion. 1 byte.

##### **4.10.3 Value**

1. Defines the actual value.

2. The current available fields are:

Tag	Field name	Field description	Type	Length	Units	Range
1	File Name and Extension	This field will contain the file name including the extension. However, the file name shall not	Character array	variable	None	No restriction

		include the directory path. Note that the file name should only be sent in the <i>first</i> message sequence for a given message.				
2	Priority	Defines the operational priority for a given payload product	Unsigned 1	1 byte	Enumerated	0 – Best Effort 1 – Critical 2 – High 3 – Medium 4 – Low 5-85 – Reserved 86-255 – VSM specific
3	Security Classification	Defines the security classification for the product	Unsigned 1	1 byte	Enumerated	1 = Unclassified 2 = Restricted 3 = Confidential 4 = Secret 5 = Top Secret 5-85 = Reserved 86-255 = VSM Specific
4	Classifying Country	Contains the enumerated Text according to "ISO 3166 Mixed" preceded by „//“	Character Array	Maximum 6 bytes	None	No Restrictions
5	Releasing Instructions	Contains a list of country codes, according to "ISO 3166 Mixed", to indicate the countries to which information in a digital motion imagery file is releasable. Multiple country codes shall be separated by a blank (space – NOT underscore). Multiple country codes shall be concatenated in one Releasing Instructions metadata element entry and shall not be encoded as individual metadata elements in the Sets. The use of blank spaces to separate country codes, instead of semi-colons or	Character array	Maximum 40 bytes	None	No Restrictions

		other characters, is to comply with security guidelines and to allow parsing of fields by automated security screening systems. The country code of the originating country shall appear first, then the country codes of other countries to which the data is releasable shall appear in alphabetical order, and, finally, the codes of any non-state organizations (such as NATO) to which the data is releasable shall appear in alphabetical order.				
6	File Timestamp	Provides the file timestamp (date modified)	Double	8 bytes	s	See Section 1.7.2

**Table 4 - 165: Optional Header****4.11 MESSAGE DATA**

This field will contain a General Product Transport Message that was identified in Message Type.

**4.12 CHECKSUM**

See STANAG 4586, Chapter 3 Section 3 for definition. 4 byte unsigned integer.

## 5. GENERAL MESSAGES.

### 5.1 MESSAGE #1700: GENERIC INFORMATION REQUEST BY SEQUENCE MESSAGE.

1. This message shall be sent by a CUCS to a VSM to request the resending of one or more message sequences that were never received by the CUCS or were received but corrupted for example.

2. This message is somewhat similar to STANAG 4586 Generic Information Request Message (Message #1403) except that it allows for requesting the sequence numbers for a given message instance.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1700.01	1	Time Stamp	Double	s	See Section 1.7.2
1700.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
1700.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
1700.04	4	VSM ID	Integer 4	None	See Section 1.7.5
1700.05	5	Data Link ID	Integer 4	None	See Section 1.7.5
1700.06	6	Station Number	Unsigned 4	Bitmapped	0x00000000 = N/A 0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1700.07	7	<b>Message Instance</b> The message instance identifier for the message requested (message instance must be unique across the network). See Section 4.3.	Unsigned 4	None	$1 \leq x$
1700.08	8	<b>Number of Requested Message Sequence(s)</b> Indicates the number of requested message sequences. Used to determine the size for field 9 Requested Message Sequence(s) by multiplying this value by 4.	Unsigned 2	None	$1 \leq x \leq 349$ (Assuming an optional header size equal to zero)
<b>Requested Message Sequence(s)</b> repetition begins (where n = 1 to "Number of Requested Message Sequence(s)")					
A variable array containing the requested message sequences where each value is represented by 4 bytes.					
1700.09	-	<b>Message Sequence #&lt;n&gt;</b>	Unsigned 4	None	No Restrictions
<b>Requested Message Sequence(s)</b> repetition ends					

**Table 4 - 166: Message #1700: Generic Information Request by Sequence Message.**

3. Note: This message can be used by the CUCS to request one or more missed or corrupted sequences for a given message

4. Continuing with the example presented in Section 3.2, if seq 1 and seq 3 of the CBRN4 message where missing or corrupted then the CUCS can use Generic Information Request by Sequence Message (Message #1700) to request them again.

<b>STANAG 4586 traffic</b>	
<b>CUCS</b>	<b>VSM</b>
...	...
	<- Message #309: CBRN Detection Message
Message #1400: Message Acknowledgment <sup>5</sup> ->	

<b>Generic Product Transport traffic</b>	
<b>CUCS</b>	<b>VSM</b>
...	...
	<- Message #1741: CBRN4 (seq 1)
	<- Message #1741: CBRN4 (seq 2)

<sup>5</sup> To acknowledge the receipt of the CBRN Detection (STANAG 4586 message) only

...	...
	<- Message #1741: CBRN4 (seq3 3)
	Message #1700: Generic Information Request by Sequence ->
	<- Message #1741: CBRN4 (seq 1)
	<- Message #1741: CBRN4 (seq 3)
	...

**Figure 4 - 20: Message Traffic Flow****5.2 MESSAGE #1701: GPT NACK CONFIGURATION.**

This GPT message shall be sent either from the source (e.g., VSM) or the destination (e.g., CUCS) to configure the negative acknowledgement (NACK) messages.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1701.01	1	Time Stamp	Double	s	See Section 1.7.2
1701.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
1701.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
1701.04	4	VSM ID	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1701.05	5	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000000 = N/A 0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
1701.06	6	<b>NACK Mode</b>  Determines when NACKs can be sent.	Unsigned 1	Enumerated	0 = None to Indicate no NACK is Sent 1 = Send NACKs Based on Timeout 2 = Send NACKs at the end of the Product Transmission 3 - 85 = Reserved 86 - 255 = VSM Specific
1701.07	7	<b>Number of NACKs</b>  Determines the number of NACKs to send when the condition for NACK mode is reached.	Unsigned 1	None	$1 \leq x$
1701.08	8	<b>Timeout</b>  Determines when the destination will start sending NACKs (not applicable in all NACK modes) if there is no message segments for a given message identifier which are being received.	Unsigned 4	ms	No Restrictions

**Table 4 - 167: Message #1701: GPT NACK Configuration****5.3. Message #1702: GPT Message Transmission Latency.**

1. This GPT message shall be sent from the destination (e.g., CUCS) to the source (e.g., VSM) to control the message transmission latency of all products or a single product.
2. Examples of using this message to slow down the rate of transmission for all products include the scenario when the receiver cannot handle the speed at which the sender is sending the products (processor speed, etc) then this message can be used to slow down the rate of transmission for all products. It is important to consider the effect this might have on the Timeout field (Unqie ID #1701.08) which might need to be increased to accommodate a slower rate without triggering NACKs.
3. Examples of using this message to slow down the rate of transmission for a given product include the scenario when a (large) product with a lower priority is slowed down in order not to interfere with other products. It is important to consider the effect this might have on the Timeout field (Unique ID #1701.08) which might need to be increased to accommodate a slower rate without triggering NACKs.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1702.01	1	Time Stamp	Double	s	See Section 1.7.2
1702.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
1702.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
1702.04	4	VSM ID	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1702.05	5	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000000 = N/A 0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
1702.06	6	<b>Scope</b>  Defines the scope of Message #1702.	Unsigned 1	Enumerated	0 = All Products 1 = Single Product 2 - 85 = Reserved 86 - 255 = Payload Specific
1702.07	7	<b>Message Instance Identifier</b>  Defines which product will be affected by the change in transmission if Unique ID #1702.06 is set to "Single Product".	Unsigned 4	None	No Restrictions
1702.08	8	<b>Message Transmission Interval</b>  Defines the interval between the message sequences that form a product.	Unsigned 4	ms	No Restrictions

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1702.09	9	<b>Revised Timeout</b> Revises the timeout communicated in Unique ID #1701.08 as a result of the change in the transmission latency (Unique ID #1702.08). If no change is required then simply use the same value that was originally declared in Unique ID #1701.08.	Unsigned 4	ms	No Restrictions

**Table 4 - 168: Message #1702: GPT Product Transmission Rate****5.4. Message #1703: GPT Abort Product Transmission.**

1. This GPT message shall be sent from either the destination (e.g., CUCS) or the source (e.g., VSM) to abort the transmission of a product due to change in bandwidth or priorities for example.
2. Once a product has been aborted then it cannot be resumed again, in that case it must be requested again.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1703.01	1	<b>Time Stamp</b>	Double	s	See Section 1.7.2
1703.02	2	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
1703.03	3	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5
1703.04	4	<b>VSM ID</b>	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1703.05	5	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000000 = N/A 0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
1703.06	6	<b>Message Instance Identifier</b>  The wrapper message instance that identifies the product.	Unsigned 4	None	No Restrictions
1703.07	7	<b>Explanation</b>  Used by the sender to provide an explanation for the action performed on the product.	Character 80	None	No Restrictions

**Table 4 - 169: Message #1703: GPT Abort Product Transmission****5.5. Message #1704: GPT Pause Product Transmission.**

1. This GPT message shall be sent from either the destination (e.g., CUCS) or the source (e.g., VSM) to pause the transmission of a product due to change in bandwidth or priorities for example.
2. A paused transmission can be resumed again using Resume Product Transmission (Message #1705).

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1704.01	1	<b>Time Stamp</b>	Double	s	See Section 1.7.2
1704.02	2	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
1704.03	3	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5
1704.04	4	<b>VSM ID</b>	Integer 4	None	See Section 1.7.5
1704.05	5	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000000 = N/A 0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
1704.06	6	<b>Message Instance Identifier</b>  The wrapper message instance that identifies the product.	Unsigned 4	None	No Restrictions
1704.07	7	<b>Explanation</b>  Used by the sender to provide an explanation for the action performed on the product.	Character 80	None	No Restrictions

**Table 4 - 170: Message #1704: GPT Pause Product Transmission**

## 5.6 Message #1705: GPT Resume Product Transmission.

This GPT message shall be sent from either the destination (e.g., CUCS) or the source (e.g., VSM) to resume the transmission of a product as a follow-up to Pause Product Transmission (Message #1704).

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1705.01	1	Time Stamp	Double	s	See Section 1.7.2
1705.02	2	Vehicle ID	Integer 4	None	See Section 1.7.5
1705.03	3	CUCS ID	Integer 4	None	See Section 1.7.5
1705.04	4	VSM ID	Integer 4	None	See Section 1.7.5
1705.05	5	Station Number	Unsigned 4	Bitmapped	0x00000000 = N/A 0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
1705.06	6	Message Instance Identifier  The wrapper message instance that identifies the product.	Unsigned 4	None	No Restrictions
1705.07	7	Explanation  Used by the sender to provide an explanation for the action performed on the product.	Character 80	None	No Restrictions

Table 4 - 171: Message #1705: GPT Resume Product Transmission

## 6. PAYLOAD MESSAGES.

### 6.1. MESSAGE #1741: ATP-45 (E) CBRN4.

1. This message shall be sent by a VSM to a CUCS containing the payload product in this case an ATP-45 (E) CBRN Textual Report.
2. The report file name should be sent in the optional section of the payload message wrapper with the first message sequence only.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1741.02	1	Time Stamp	Double	s	See Section 1.7.2
1741.03	2	Vehicle ID	Integer 4	None	See Section 1.7.5
1741.04	3	CUCS ID	Integer 4	None	See Section 1.7.5
1741.05	4	Station Number	Unsigned 4	Bitmapped	0x00000000 = N/A 0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1741.06	5	<b>Detection Type</b> Indicates the type of the detection in relation to the payload's substance threshold(s).	Unsigned 1	Enumerated	0 = Below Threshold 1 = Above Threshold 2 = Above Threshold Update 3 = NIL (Detection Cleared) 4 - 85 = Reserved 86 - 255 = Payload Specific
1741.07	6	<b>Product Length</b> The number of bytes for the portion of the product found in this message (not the total product length).  The maximum is 1410 bytes assuming an optional header size zero.	Unsigned 2	Byte	$x \leq 1,410$
1741.01	7	<b>CBRN4</b> A variable byte array representing the product (or portion of the product).	Byte ["Product Length"]	None	No Restrictions

**Table 4 - 172: Message #1741: ATP-45 (E) CBRN4****6.2. MESSAGE #1742: LOG**

1. This message shall be sent by a VSM to a CUCS containing the payload textual log file.
2. The log file name should be sent in the optional section of the payload message wrapper with the first message sequence only.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1742.02	1	<b>Time Stamp</b>	Double	s	See Section 1.7.2
1742.03	2	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
1742.04	3	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1742.05	4	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000000 = N/A 0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
1742.06	5	<b>Product Length</b>  The number of bytes for the portion of the product found in this message (not the total product length).  The maximum is 1411 bytes assuming an optional header size zero.	Unsigned 2	Byte	$x \leq 1,411$
1742.01	6	<b>Log</b>  A variable length string representing the product (or portion of the product).	Character ["Product Length"]	None	No Restrictions

**Table 4 - 173: Message #1742: Log****6.3. MESSAGE #1743: RADIOLOGICAL/NUCLEAR DETAILED SENSOR MEASUREMENT**

1. This message shall be sent by a VSM to a CUCS containing the Radiological/Nuclear payload detailed sensor measurement file.
2. The detailed sensor measurement file name should be sent in the optional section of the payload message wrapper with the first message sequence only.

<b>Unique ID</b>	<b>Field</b>	<b>Data Element Name &amp; Description</b>	<b>Type</b>	<b>Units</b>	<b>Range</b>
1743.02	1	<b>Time Stamp</b>	Double	s	See Section 1.7.2
1743.03	2	<b>Vehicle ID</b>	Integer 4	None	See Section 1.7.5
1743.04	3	<b>CUCS ID</b>	Integer 4	None	See Section 1.7.5
1743.05	4	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000000 = N/A 0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
1743.06	5	<b>Detection Type</b>  Indicates the type of detection in relation to the payload's substance threshold(s).	Unsigned 1	Enumerated	0 = Below Threshold 1 = Above Threshold 2 = Above Threshold Update 3 = NIL (Detection Cleared) 4 - 85 = Reserved 86 - 255 = Payload Specific
1743.07	6	<b>Product Length</b>  The number of bytes for the portion of the product found in this message (not the total product length).  The maximum is 1410 bytes assuming an optional header size zero.	Unsigned 2	Byte	$x \leq 1,410$

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1743.01	7	<b>Radiological/Nuclear Detailed Sensor Measurement</b>  A variable byte array representing the product (or portion of the product).	Byte ["Product Length"]	None	No Restrictions

**Table 4 - 174: Message #1743: Radiological/Nuclear Detailed Sensor Measurement**

#### **6.4. MESSAGE #1744: CHEMICAL/BIOLOGICAL DETAILED SENSOR MEASUREMENT**

1. This message shall be sent by a VSM to a CUCS containing the Chemical/Biological payload detailed sensor measurement file.
2. The detailed sensor measurement file name should be sent in the optional section of the payload message wrapper with the first message sequence only.

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1744.02	1	Time Stamp	Double	s	See Section 1.7.2
1744.03	2	Vehicle ID	Integer 4	None	See Section 1.7.5
1744.04	3	CUCS ID	Integer 4	None	See Section 1.7.5

Unique ID	Field	Data Element Name & Description	Type	Units	Range
1744.05	4	<b>Station Number</b>	Unsigned 4	Bitmapped	0x00000000 = N/A 0x00000001 = Stn #1 0x00000002 = Stn #2 0x00000004 = Stn #3 0x00000008 = Stn #4 0x00000010 = Stn #5 0x00000020 = Stn #6 0x00000040 = Stn #7 0x00000080 = Stn #8 0x00000100 = Stn #9 0x00000200 = Stn #10 0x00000400 = Stn #11 0x00000800 = Stn #12 0x00001000 = Stn #13 0x00002000 = Stn #14 0x00004000 = Stn #15 0x00008000 = Stn #16 0x00010000 = Stn #17 0x00020000 = Stn #18 0x00040000 = Stn #19 0x00080000 = Stn #20 0x00100000 = Stn #21 0x00200000 = Stn #22 0x00400000 = Stn #23 0x00800000 = Stn #24 0x01000000 = Stn #25 0x02000000 = Stn #26 0x04000000 = Stn #27 0x08000000 = Stn #28 0x10000000 = Stn #29 0x20000000 = Stn #30 0x40000000 = Stn #31 0x80000000 = Stn #32
1744.06	5	<b>Detection Type</b>  Indicates the type of detection in relation to the payload's substance threshold(s).	Unsigned 1	Enumerated	0 = Below Threshold 1 = Above Threshold 2 = Above Threshold Update 3 = NIL (Detection Cleared) 4 - 85 = Reserved 86 - 255 = Payload Specific
1744.07	6	<b>Product Length</b>  The number of bytes for the portion of the product found in this message (not the total product length).  The maximum is 1410 bytes assuming an optional header size zero.	Unsigned 2	Byte	$x \leq 1,410$
1744.01	7	<b>Chemical/Biological Detailed Sensor Measurement</b>  A variable byte array representing the product (or portion of the product).	Byte ["Product Length"]	None	No Restrictions

**Table 4 - 175: Message #1744: Chemical/Biological Detailed Sensor Measurement**

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## 1 INTRODUCTION

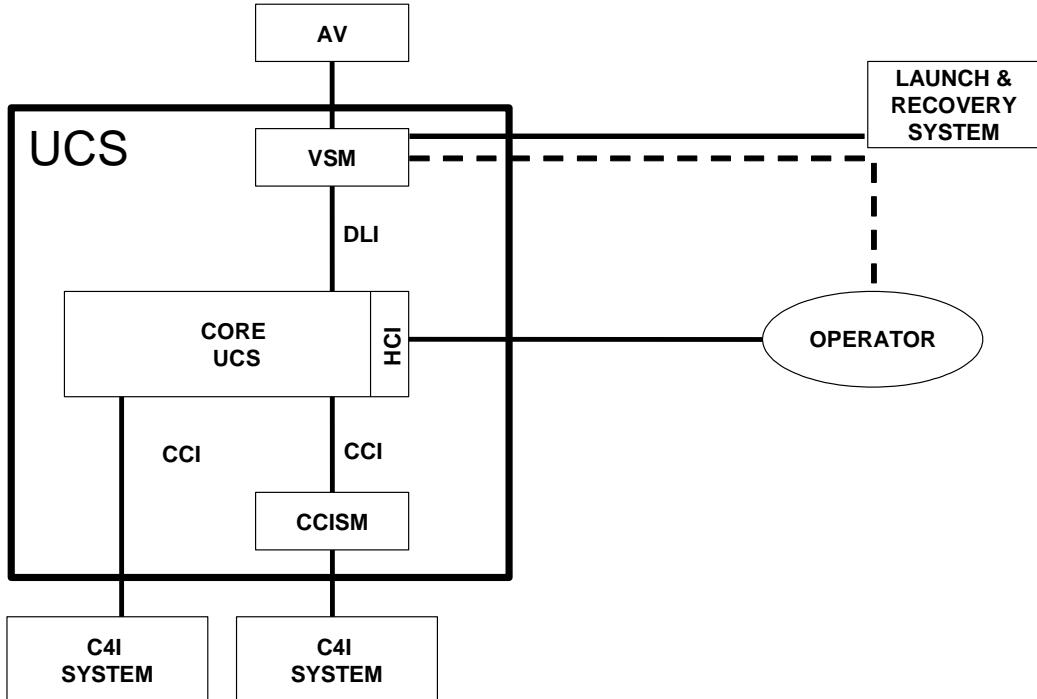
### 1.1 SCOPE

1. Allied Engineering Publication (AEP)-84 Volume I Chapter 5 specifies the Command and Control Interface (CCI) between the Core Unmanned Aircraft (UA) Control System (CUCS) and Command, Control, Communication, Computer, & Intelligence (C4I) systems.
2. Standardisation of the CCI is intended to enable NATO nations to achieve interoperability between UASs and C4I users by the implementation of a common set of generic interface standards. A standard CCI should facilitate seamless integration of NATO UASs into joint combined C4I infrastructures across all levels of interaction.
3. The purpose of Chapter 5 is to specify standards covering command, control, and data transmission and receipt from all external systems that need to communicate with the CUCS. These standards will lead to the enablement of interoperability between all present (legacy systems) and future UASs and designated C4I systems. This chapter specifies standards to be implemented in the CUCS, and does not impose any requirements on C4I systems.

### 1.2 CCI GENERAL OVERVIEW

1. The CCI is an interface between the CUCS and the external C4I systems. It specifies the data requirements that should be adopted for communication between the CUCS and all C4I end users through a common, standard interface. Figure 5 -1 illustrates the CCI within the UCS functional architecture.
2. All types of data or information that need to be formally exchanged between the CUCS and the external C4I systems shall be defined in accordance with the standards specified in this chapter [CCI 0001].
3. The CCI is intended to cover all types of messages and data that need to be exchanged in both directions between the CUCS and the C4I systems during all the phases of a UA mission, including:
  - Before the flight: tasking messages, tactical situation, environmental data, general mission constraints and mission plans.
  - During the flight: status and service messages, payload data, progress reports
  - After the flight: status and service messages, payload data, post-flight exploitation reports, mission reports
4. The format of all data passing across the CCI is defined in this chapter but a UCS implementation or connected C4I system may use other formats provided format translations take place in accordance with the CCI definitions:
  - A UCS implementation may be CCI compliant with the CUCS retaining its own, possibly non-standard internal data representation, for example for processing efficiency. Chapter 5 allows CUCS developers to identify data that has to be generated or accepted by the CUCS software in order to be CCI compliant.
5. Many C4I systems, particularly legacy systems, may not directly comply with the CCI standards specified in this chapter. To avoid both proliferation of the number of standards specified in the CCI and modifications to the large number of national or joint C4I systems to be connected to CUCS, conversion software and/or hardware will be necessary between the CCI and incompatible C4I systems. This conversion software/hardware is depicted in Figure 5 -1 and is called the Command and Control Interface Specific Module (CCISM). The CCISM may form part of a particular UCS implementation to establish a connection between the CUCS and specific “customers” of the UAS (e.g., one or more C4I systems). The CCISM, when

needed, can range in complexity from a simple format or protocol translator to a user-specific application to adapt the type of information to particular C4I requirements.



**Figure 5 - 1: UCS Interface Functional Architecture**

6. The CCISM is mainly intended for communication with legacy C4I systems that are not directly compatible with STANAG 4586 specified standards, protocols or physical layer. When future C4I systems are developed it is expected that they will be STANAG 4586 compliant in which case there will be a direct link without the need for an intermediate CCISM.

7. This chapter does not address either the hardware needed for information exchange between the CUCS and the CCISM or the architecture and design of the CCISM itself. Design, development and fielding of specific CCISM functionality, when needed, will be the responsibility of either the UAS or the applicable C4I program office.

8. Also, it is recognised that some communication will take place between the UCS and C4I systems via voice or email. As these methods are inherently unstructured, they fall outside the scope of this STANAG, apart from the need to conform to the requirements of the NATO C3 Technical Architecture (NC3TA), cited in Chapter 3, to ensure that such communications can take place.

### 1.3 CHAPTER 5 OVERVIEW

Chapter 5 is divided into the following sections:

- Section 1: Introduction: Provides a general introduction of the CCI architecture and gives a brief system overview.
- Section 2: CCI Data Description: Identifies and describes the data exchanged between the CUCS and the C4I systems. This section concentrates on the description of the information to be transferred across the CCI without specification of data formats.

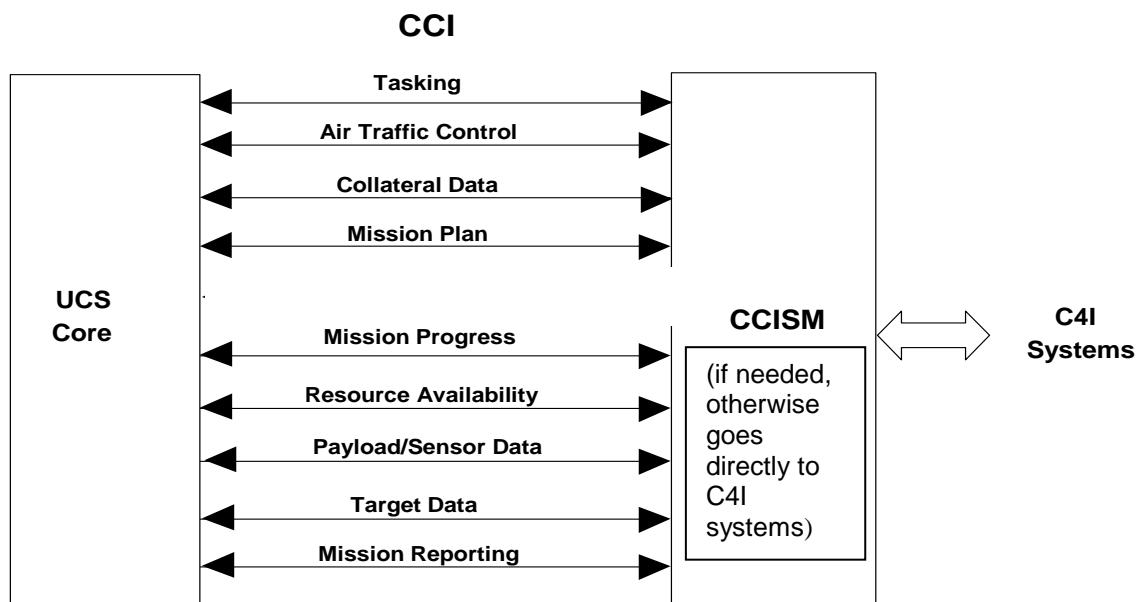
- Section 3: CCI Data Representation: Defines the data formats that should be implemented in an implementation of the CCI. This chapter covers message formats, file formats, data exchange standards, applicable transfer media and protocols.
- Attachment 5-1: Information Exchange Requirements: Lists the information exchange requirements for communications between the CCI and external systems.
- Attachment 5-2: Allied Data Publication-3 (ADatP-3) Message Implementation Requirements: Lists the set of ADatP-3 messages that are to be transferred across the CCI. These messages are a sub set of STANAG 7149, NATO Message Catalogue.
- Attachment 5-3: UA Level Of Interoperability (LOI) ADatP-3 Requirements: Allocates the ADatP-3 messages to achieve each LOI, where suitable at the lowest level.

## 1.4 INFORMATION EXCHANGE REQUIREMENTS

The information exchange requirements (IERs) define the generic data types, criticality of the data, receiving and transmitting nodes, and format of the data that need to be exchanged between the CUCS and the various types of C4I systems, as well as other CUCSs, to support the operational user mission needs. These IERs, provided in Attachment 5-1 of this chapter, identify the information exchange that needs to take place between the CUCS and the external C4I systems to achieve the operationally required feasible LOI according to the UAS's Concept of Operations (CONOPS). The identification and definition of messages to satisfy these requirements is provided in Sections 2 and 3 of this chapter.

## 1.5 TYPES OF CCI DATA

1. Figure 5 - 2 depicts the top level of the IERs exchanged between the CUCS and the external C4I systems. Further breakdown of these top level IERs is presented in Attachment 5 - 1.



### **Figure 5 - 2: Types of CCI Data**

2. These data types are described in Section 2 of this chapter, and are summarised below:
  - Tasking - UA tasking messages as received from the appropriate tasking authority.
  - Air Traffic Control (ATC) - Data that should be sent or received from civil or military aviation authorities if the UA has to pass through civil airspace.
  - Collateral Data - Supporting information that is required for the planning and execution of UA missions, and which is not defined in the other data areas. This includes the tactical situation, target database, previously exploited imagery and environmental data.
  - Mission Plan - As generated for a tasked mission.
  - Mission Progress - Status as the UA mission is in progress.
  - Resource Availability - Status of the sub components of the UAS.
  - Payload/Sensor Data - Data received from the UA payload(s), may be raw, processed or exploited.
  - Target Data - Near real time target location data for targeting purposes.
  - Mission Reporting – Information on the outcome of a mission.

#### **1.6 IMPLEMENTATION OF UA LOI IN THE CCI**

1. For an implementation of the UCS to achieve a required LOI, Levels 1 through 5, it is necessary for the CCI to specify which different data types are mandatory to achieve a given LOI and above. This is specified in Section 3 and Attachments 5 - 1 and 5 - 2 of this chapter.
2. However, this does not cover the requirements of particular national and/or NATO concepts of operation for different types of UASs that may override the necessity to include particular types of data. For example, Section 3.3 states that ATC messages are mandatory to achieve LOI 4 and 5. This may not be appropriate for a UA that will never use civil airspace, such as a short range tactical UA, but which is nevertheless required to achieve LOI 4. Operating procedures will vary according to individual national and NATO requirements and are therefore outside the scope of this STANAG. Therefore use of the term mandatory in connection with LOI in this chapter shall be interpreted to include the phrase “provided that operating procedures require the exchange of this type of data” [CCI 0002].

#### **1.7 STRATEGY FOR SELECTION OF CCI STANDARDS**

1. The approach taken in the selection of standards for each type of data given in Section 1.5 has been:
  - To identify existing NATO standards as specified in various STANAGs and other NATO publications.
  - Where such NATO standards do not exist, identify other military or commercial standards that are applicable to that data type.
  - Analyse the candidate standards to ensure they meet the requirements of all types of UASs.
  - Where choices may be made, for example in the selection of ADatP-3 messages, the selected items are given (e.g., the standard is profiled).
2. Priority has been given to existing NATO standards wherever possible. In some cases, there is a likely future standard that is applicable to some of the data types. Such future

standards cannot be specified at this stage as they may change or never be adopted. In these cases, an existing standard has been used, (e.g. ADatP-3), with a switch to the future standard intended for the future.

## 2 CCI DATA DESCRIPTION

### 2.1 INTRODUCTION

This section provides a description of each of the data types exchanged between the CUCS and the C4I system, potentially via a CCISM if the C4I system is not compatible with specified CUCS formats and standards.

### 2.2 TASKING OF THE UCS

1. The CUCS is expected to receive and respond to tasking orders, pre-planned mission plans and mission plan changes requiring dynamic retasking (change of a pre-planned mission after it has been uploaded to the UA). The response to the tasking order will be a mission plan which may be passed across the CCI interface to higher levels of the command and control structure for deconfliction and approval. (See Section 2.5 for a description of the mission plan.)
2. ADatP-3 tasking messages defined in STANAG 5500 Edition 4 and STANAG 7149 are appropriate for tasking UA missions within the UCS. It is assumed that the UCS mission planner will be designed to support multi-UA operations (two or more UAs flying simultaneously), therefore the CUCS should be able to receive multi-mission tasking.
3. In a given UCS, particularly smaller systems, tasking may be received by voice or e-mail messages. These are outside the scope of this STANAG with the exception that e-mail message applications shall be in compliance with NC3TA's NC3 Common Standards Profile (NCSP) as specified in Chapter 3 [CCI 0003].
4. The CCI shall also support the capability for dynamic re-tasking of the UA (e.g., changes to either the route or the payload plan) [CCI 0004]. These changes may be required during all phases of an operation.

#### 2.2.1 Tasking

1. The most prevalent method of tasking a UAS is by the use of an Air Tasking Order (ATO) which is common to all air missions, manned and unmanned, across multi-national forces and multi-service operations.
2. The ATO is an ADatP-3 message that may be very large and complex, possibly several hundred pages in size, not all of which will be applicable to UASs. There are other ADatP-3 messages that do not form part of an ATO and that may be used to task individual UASs or payloads. An example is the Electronic Warfare Requesting/Tasking Message (EWRTM). The complete list of these tasking messages is given in Section 3.2.1.

#### 2.2.2 Airspace Control

1. Airspace Management (ASM) is the activity of structuring the airspace and scheduling its use. In the military airspace management system the airspace is structured through the specification of Airspace Control Means (ACM) which defines airspace volumes, surfaces and lines, and specific rules for the use of the resulting airspace partitions. The ACMs approved for a given period of time are promulgated in the ADatP-3 Airspace Control Order (ACO). The ACO is based upon the air operations and airspace usage requirements of other Air Command and Control Systems (ACCS), non-ACCS tri-service entities, civil requirements and airspace requests, together with constraints imposed on the use of that airspace.
2. The ACO allows the separation of all types of aircraft, manned and unmanned, fixed and rotary wing, by the definition of altitude layers, geographic zones and surveillance systems. The ACO defines how a volume of airspace is to be structured for air missions over a given period. The ACO defines how this division of airspace will be used by different air operations throughout the 24-hour ACO cycle.

3. Therefore, for mission planning, a UCS requires the ACO to define the constraints on the route to be flown by the UA.

### **2.3 AIR TRAFFIC CONTROL (ATC)**

1. When a UA, particularly a long range strategic UA, has to pass through controlled airspace, it is necessary to file a flight plan with civil aviation authorities.

2. The International Civil Aviation Organisation (ICAO) publishes a document that specifies the content of all messages that have to be submitted to ATC authorities before, during and after flights. This document is the “Rules of the Air and Air Traffic Services”, DOC 4444-RAC/501 currently at the thirteenth edition dated 1996.

3. The messages may be sent as appropriate and desired over voice channels, by completed paper forms or electronically. Voice messages and paper forms are outside the scope of the CCI, hence only electronic messages are considered below. There are two types of electronic messages specified by the ICAO, Air Traffic Services (ATS) and Automatic Dependent Surveillance (ADS) messages. ADS messages are sent from the air platform via a data link to an ATS unit covering the airspace in which the platform is flying, hence these are not applicable to the UCS and not considered further. However, in order to be compliant with ICAO regulations, the UA should carry a IFF/SSR device (e.g., Mode S IFF).

4. The content and formats of ATS messages are given in Appendix 3 of the above ICAO document. This STANAG does not mandate the use of these messages because they will not be required for some UASs (e.g., small UAs), but does require that, if generated in a particular system, the ICAO format should be used.

5. The ATS message types are listed in Table 5 –1:

<b>Category</b>	<b>Message Type</b>	<b>Description</b>
Emergency	Alerting	Contains a description of an emergency
	Radio communication failure	
Filed flight plan and associated update	Filed flight plan	
	Modification	Changes to a flight plan
	Cancellation	Cancellation of a flight plan
	Delay	If departure is delayed
	Departure	Actual departure time
	Arrival	Actual arrival time
Coordination (Note)	Current flight plan	Flight plan plus estimated time at a boundary point
	Estimate	Estimated time at a boundary point
	Coordination	Amendment to coordination data
	Acceptance	Acceptance of the current flight plan, estimate or coordination message
	Logical acknowledgment	Computer to computer acknowledgment
Supplementary	Request flight plan	
	Request supplementary flight plan	
	Supplementary flight plan	Fuel endurance, frequencies available, aircraft markings + others irrelevant to UAs

**Table 5 - 1: Air Traffic Control Messages**

Note: Coordination messages are for handing over control from one ATC centre to the next during a flight.

## 2.4 COLLATERAL DATA

### 2.4.1 General Battlefield Picture

1. Both enemy and own tactical situation can be exchanged between C4I systems and the UCS. This information is carried by messages, which are both incoming and outgoing. Knowledge of the position of own and enemy forces is useful within the UCS to allow the operators to understand the context of the required mission and to optimise the flight plan. Reciprocally, the UCS may use the results of image exploitation to update the local tactical situation (by generating tactical symbols related to observed targets) and to export it through intelligence networks or to upper levels of command.

2. Information on the tactical situation shall be obtained and reported by use of relevant ADatP-3 messages, particularly the Enemy Situation Report (ENSITREP) and Own Situation Report (OWNSITREP) [CCI 0006].

### 2.4.2 Mission Dependent Data

Some information on the tactical situation may be obtained via additional ADatP-3 messages that are specific to particular missions and/or payloads. An example of this is the Meaconing, Intrusion, Jamming, and Interference (MIJI) Warning Report which provides information on hazardous Electronic Warfare (EW) situations. A full list of this type of message is given in Section 3.4.2.

### 2.4.3 Chemical, Biological, Radiological and Nuclear (CBRN)

The CBRN situation is handled by a set of specific CBRN reports that are received by all units on the battlefield (see Section 3.4.3). These are needed by a CUCS both as a hazard warning and to carry out mission planning for CBRN payloads.

### 2.4.4 Artillery Targeting

A UCS can support artillery operations such as target acquisition and firing support. Information has to be exchanged between the UCS and the artillery networks. There are specific ADatP-3 messages to cover this requirement, for example the Artillery Target Intelligence-Target Information Request (ATI.TIR) that is used to request target information either as a one-time query or as a standing request for target information. Another example is the Artillery Target Intelligence-Artillery Target Report (ATI.ATR) message, which provides a report in response to the ATI.TIR.

### 2.4.5 Meteorological Data

Meteorological data may be required for UA mission planning. This includes information related to wind (direction and speed), visibility, significant current and forecasted weather, amount of turbulence, cloud cover, cloud base altitude, cloud top altitude, temperature, and barometric pressure. This is available via the ADatP-3 messages listed in Section 3.4.5 or via international meteorological data.

### 2.4.6 Image Products

1. There will be a requirement for the operator to read imagery and image products, which are relevant to the area of operation, from external C4I systems. Such collateral material could be needed, for example, for detailed mission planning or image exploitation. It is expected that these image products will be accessed from one of a number of image libraries (IL) held by various NATO or coalition nations. STANAG 4559, the NATO Standard Image Library Interface (NSILI), exists to standardise access to such image libraries.

2. The CUCS may be connected to a network to allow file transfers from the external ILs to the CUCS using the software interface specified in STANAG 4559.

3. Once the operator is logged on to the external ILs (logging on is beyond the scope of STANAG 4559), NSILI specifies only query and read transactions with ILs. Defining mechanisms for writing image products into an IPL is the responsibility of the IPL owner and is outside the scope of both STANAG 4559 and STANAG 4586. Therefore, if it is desirable to deposit imagery data into the NATO releasable IL, the CUCS should follow the protocols established by the nation's IL and defined by the external C4I system that provides this capability. This protocol is typically provided as an FTP transfer of the imagery file data to a preconfigured directory accessible over the network.

4. NSILI specifies that image products will be delivered in STANAG 4545 format. Delivery of image products will be via the LAN in the majority of cases, but NSILI also permits delivery via other media. If products are delivered on magnetic tape the media will conform to STANAG 7024 with the data stored in STANAG 4545 format. This will require magnetic tape readers conforming to STANAG 7024 to be provided in an implementation of the UCS.

## **2.5 Mission Plan**

### **2.5.1 General Considerations**

1. Mission planning for UASs consists of route planning, payload planning, data link planning (including frequency planning), and UA emergency recovery planning (rules of safety). The combined results of these four items comprise the mission plan.

2. It should be noted that the data required to be able to generate a mission plan is normally far more than contained in these items. A detailed knowledge of current Phase and Boundary lines, Engagement Areas, Hazards, Air Defence Units (ADU) and Control Measures is also required. This information is already covered in the collateral data section of this document.

3. Pre-planned missions may also be provided across the C4I interface in the form of a mission plan that has been developed by another UA planning system.

4. The mission planner also requires vehicle performance models for UAs controlled by the UCS to calculate fuel consumption, climb rates etc. These performance models will be included in the Vehicle Specific Module (VSM), described in Chapter 4, Data Link Interface.

5. Other functions that may be available in a mission planner are the ability to do radar shadowing and line of sight evaluations and to show confliction and inter visibility between points and routes. These calculations require knowledge of ADU/Radar characteristics and the plans of other users.

6. Planning for designator operations will also require a means of coordination/implementing of Laser Codes and Keywords.

7. The capability should exist within the UCS (HCI) to provide the mission plan, or components of the mission plan, as hard or soft copy as required. The outputs from a mission planner may also include printouts of instructions for loading the UA (e.g., fuel type and amount, sensor/designator settings, and communications frequencies).

### **2.5.2 Dissemination of the Mission Plan**

1. The mission plan needs to be sent to different recipients at various times, these include:
  - The tasking authority, immediately after generation of the mission plan, for airspace deconfliction and approval

- The UA via the Data Link Interface (DLI) for those UAs that can autonomously execute a mission plan
  - To another UCS for handover of UA control via the DLI
2. Ideally, the same data format will be used for each transfer of the mission plan data. However it is recognised that not all recipients will require the full mission plan. For those systems it will be possible to extract only the necessary parts. Note that UCS-to-UCS transfer requires the ability for a UCS to receive a mission plan.
3. ATC is excluded from the list of recipients as there are existing civil flight plan formats (see Section 2.3) that are adequate for UCS mission plan formats.

### **2.5.3 Route Planning**

1. Route planning may be done at the UCS or passed from an external agency. This agency may be Headquarters, another UCS, or come from an intermediate level. A route plan from Headquarters may require additional tactical information to be built into it at the squadron of the Forward Operations Base (FOB) to make it compatible with the current state of the battle space. The instructions might be very detailed, where information about a specific target is required or may be instructions for a Reconnaissance, Intelligence, Surveillance and Target Acquisition (RISTA) type operation and specify only an area of operations. When a route plan comes from another UCS this may be a UA handover operation with detailed route and instructions or may be a plan generated at another UCS for use by other operators.

2. A route plan will comprise a set of waypoints. These waypoints may have different parameters, which drive the action to be taken when a waypoint is reached. Flight patterns may be incorporated into the route either as a series of sequenced waypoints or as ‘seed’ waypoints with range and bearing information, which will depend on the sophistication of the UCS and UASs.

### **2.5.4 Payload Planning**

Payload planning includes details of how a specific payload is to be used. The details of planned payload operations will be incorporated into the payload plan, and associated to waypoints in the route.

### **2.5.5 Data Link Planning**

Data link planning includes the details of the links, bands, and frequencies to be used (e.g., see Section 3.2.1 Tasking, of this chapter). Data link planning needs initial assignment provided by C4I (e.g., through the OPTASK LINK message) and leads to a set of configuration data that is used by the mission planner. This is sent to the DLI for data link configuration (see Chapter 4, Data Link Control Command).

### **2.5.6 Emergency Recovery Plan**

In case of failures such as data link loss, UAs need to automatically carry out recovery actions referred to as Rules of Safety (ROS). The ROS are selected at the mission planning stage. The ROS differ according to the priority given to emergency action relative to that given to mission execution. Using the mission planning application, the UCS operator selects the appropriate safety scenario (e.g., to define a pre-programmed recovery route).

## **2.6 HANOVER CONTROL**

This section deleted.

## 2.7 MISSION PROGRESS

This data is required primarily to inform higher levels of command about the progress of the mission. This includes information on the UA position, status of on-board equipment, fuel levels and ongoing achievement of mission goals. The ADatP-3 message Mission Report (MISREP) amplified by accompanying text in an amplification (AMPN) set will be used to report this information.

## 2.8 RESOURCE AVAILABILITY

The CCI will have the capability to provide, as well as receive, the status and operational capability of the sub-components of the UAS. This will include both the Air Segment and the Ground Segment of the UAS as specified in the following paragraphs.

### 2.8.1 Air Segment Status

The status and operational capability of the air segment of the UAS will consist of data relevant to the UA(s), the payload(s), and the air data link(s). The following types of data will be incorporated into the resource availability reporting process:

#### 2.8.1.1 Unmanned Aircraft

Total number of AVs assigned		
UA type (Repeated for each UA type)	Number of UAs of this type	
	Tail number (repeated for each UA of this type)	UA configuration
		UA status (see 2.8.1.4)
		UA operational state (see below)

**Table 5 - 2: UA Availability**

UA operational state is one of:

- Airborne - Executing a mission
- Ground alert - Ready to fly and execute a mission
- Airborne alert - In flight and awaiting a mission

#### 2.8.1.2 Payloads

Total number of payloads		
Payload type (Repeated for each payload type)	Number of payloads of this type	
	Payload ID(Repeated for each payload)	Payload Configuration
		Payload Status (see 2.8.1.4)
		UA Tail number

**Table 5 - 3: Payload Availability**

#### 2.8.1.3 Vehicle Data Terminals (VDT)

Total number of VDTs		
VDT Type (repeated for each VDT type)	Number of VDTs of this type	
	Status (repeated for each type)	Primary link status (see 2.8.1.4)
		Secondary link status (see 2.8.1.4)

**Table 5 - 4: VDT Availability****2.8.1.4 Status Table**

This table shows the status data that will be used for status entries in the tables in Sections 2.8.1 and 2.8.2.

Fully Operational	
Limited Operational	Reasons/Limitations
	Estimated Time of Return to Full Ops
Number Non-Operational	Reasons
	Estimated Time of Return to Full Ops

**Table 5 - 5: Operational Status Data****2.8.2 Ground Segment Status**

The status and operational capability of the ground segment of the UAS will consist of data relevant to the UCS(s), the launch system(s), the recovery system(s) the control data link(s), and the maintenance and refurbishing system(s). The following types of data will be incorporated into the resource availability reporting process:

**2.8.2.1 UCSs**

Number of UCSs available to support UA operations	
UCS ID (Repeated for each UCS)	UCS Configuration (including UA Types supported, and LOI)
	UCS Status (see 2.8.1.4)
	CCI Dissemination Capability C4I Products Supported
	C4I Systems Supported

**Table 5 - 6: UCS Availability Data****2.8.2.2 Launch Systems**

Number of launch systems available to support UA operations	
Launch System ID (repeated for each launch system)	Launch System Configuration (including UA Types supported)
	Launch System Configuration (including UA Types supported)
	Status (see 2.8.1.4)

**Table 5 - 7: Launch System Availability****2.8.2.3 Recovery Systems**

Number of recovery systems available to support UA operations	
Recovery system ID (repeated for each recovery system)	Recovery System Configuration (including UA Types supported)
	Status (see 2.8.1.4)

**Table 5 - 8: Recovery System Availability****2.8.2.4 Control Data Terminals (CDT)**

Number of CDTs available		
CDT type (repeated for each CDT type)	Number of CDT type available	
	Link status (repeated for each CDT type)w	Primary (see 2.8.1.4)
		Secondary (see 2.8.1.4)

**Table 5 - 9: CDTs Availability****2.8.2.5 Maintenance and Refurbishing Systems**

Type of replaceable unit (repeated for each type)	Number of each type held
Fuel availability	
Personnel Availability to Perform Maintenance	

**Table 5 - 10: Other Unit Resource Availability Data****2.9 PAYLOAD/SENSOR DATA****2.9.1 OVERVIEW**

1. Sensor data may be received from the air platform in a variety of formats depending on the type of UA and sensor. Where possible, the formats used to transmit data from the CUCS to the C4I systems across the CCI will use existing international standards (NATO or commercial) so as to minimise the number of formats used in the CCI and by the receiving C4I systems. It is impossible to cover all existing and future types of payloads because of the rate of change in sensor technology. Therefore, only the most common types of sensors have been considered to date; and specific UCS implementations may need to convert from a particular sensor data format to the CCI required data format if the two do not match.

2. The types of payloads, possible sensor outputs via the CCI, and maturity of current standards addressed in this version of the AEP-84 Volume are summarised in Table 5 –11 below.

Note: If a specific UAS does not support a particular payload type (e.g., GMTI, ELINT, etc.), the supporting UCS can still be STANAG 4586 compliant without having to implement those requirements associated with that particular payload.

<b>Payload Type</b>	<b>Sensor Type</b>	<b>CCI Output</b>	<b>Applicable Standards</b>
Imagery	EO/IR/MSI/HSI TV camera	Motion/Still image	STANAG 4545, 7023, 4609
	EO/IR/MSI/HSI Line scanner	Continuous image/Still image	STANAG 4545, 7023
	EO/IR/MSI/HS Photo (framing) sensor	Still image	STANAG 4545, 7023
	Synthetic Aperture Radar (SAR)	Spot	STANAG 4545, 7023
		Swath (Area Search)	STANAG 4545, 7023
	Radar Moving Target Indicator (MTI)	Vector data	STANAG 4607
Signals Intelligence (SIGINT)	Electronics Intelligence (ELINT/ESM)	Signal data	STANAG 4633
		Dissemination reports	STANAG 4633
	Communications Intelligence (COMINT)	Signal data	TBD
		Dissemination reports	TBD
Electronic Warfare (EW)	Jammer	None	N/A
Chemical, Biological, Radiological, and Nuclear (CBRN)	Detectors	Dissemination reports	STANAG 2103 (CBRN 4)
Laser designator/ range finder	N/A	None	N/A
Communication relay	N/A	None	N/A
Stores/Weapon	N/A	None	N/A

**Table 5 - 11: Payload and Sensor Type with CCI Output**

3. It is recognised that there will be requirements to receive unprocessed (raw) sensor data from particular UA payloads (for example unprocessed SAR) that may need to be transferred to an external system (for example for exploitation). Such data is likely to be in a proprietary non-standard format, therefore it is outside the scope of the CCI standard and not considered further in this chapter.

4. Those payloads that provide data to be disseminated via the CCI are described below.

## 2.9.2 Imagery

### 2.9.2.1 Electro/Optical Imagery

Electro/optical imagery consists of visible, infrared as well as multispectral/ hyperspectral imagery. Multispectral and hyperspectral images consist of multiple images from different parts of the electromagnetic spectrum.

#### 2.9.2.1.1 Digital Still Imagery

##### 2.9.2.1.1.1 Framed

A framed image is a single rectangular image of a predefined size. The still image can be a standalone image or combined with annotations, symbology and descriptive text. The dimensions of the image are only limited by sensor characteristics. STANAG 7023 and 4545, respectively, are the controlling standards for these types of payloads.

##### 2.9.2.1.1.2 Scanned

Scanned images are typically produced by line scan sensors and the image forms a continuous strip. In this case, the complete image is of indefinite length and the image may cover an irregular path according to platform route, sensor viewing angle etc. STANAG 7023 and 4545, respectively, are the controlling standards for these types of payloads.

#### 2.9.2.1.2 Motion Imagery

##### 2.9.2.1.2.1 Analogue Video

Analogue video is a product that is provided by many legacy UASs, and also required as an input by some legacy C4I systems. If analogue video is required by a C4I system, it shall be obtained either directly from the VSM (if analogue video is a direct output from the UA to the VSM), or via the CCISM, if format and/or protocol conversion is required [CCI 0008]. Note that as a function of CCISM design, analogue video can be output from the CCISM in any of the international standard formats desired, and can also include encoding of telemetry metadata within the analogue video stream in a closed caption format in accordance with Video Imagery Standard Profile (VISP) Standard 9709 and VISP recommended practice 971.

(Note: The CUCS has a requirement to process digital video, but not a requirement to process analogue video. If analogue video is received from the UA, it can be distributed directly to the C4I system from the VSM, and will also be transformed by the VSM into digital video in accordance with STANAG 4609 for processing within the CUCS. If digital video is received from the UA, it can be processed within the CUCS; and if a C4I system requires analogue video, a CCISM will be necessary in order to take the digital video as processed inside the CUCS, and convert it into the analogue video product required).

##### 2.9.2.1.2.2 Digital Motion Imagery

Digital motion imagery will be output from the CCI as specified in STANAG 4609.

## 2.9.2.2 Radar

### 2.9.2.2.1 Synthetic Aperture Radar (SAR)

1. SAR data that has been processed on the platform or in the CUCS will be transmitted across the CCI using the same standards as for EO/IR images.
2. There may be systems (possibly legacy systems) that require SAR processing to be carried out in an external ground station and therefore require the unprocessed data to be transmitted from the CUCS. As stated above, this is considered to be non-standard data and is outside the scope of the CCI standard until such time as a standard for this data has been defined.

### **2.9.2.2.2 Ground Moving Target Indicator (GMTI)**

1. Processed GMTI data gives the position and velocity of moving targets and hence consists of a set of target vectors.

2. GMTI data will be transmitted in accordance with STANAG 4607.

### **2.9.3 Signals Intelligence (SIGINT).**

#### **2.9.3.1 ELINT**

The CUCS will handle SIGINT data and reports generated from processed SIGINT data. Cooperating airborne platforms require that data be fused to generate SIGINT information. This fusion may take place inside a CUCS. Therefore, this data should be transmitted to and from the CUCS. SIGINT reports may be generated in the CUCS for transmission to a user via the CCI.

#### **2.9.3.1.1 ESM**

ESM data is derived from analysis of enemy electronic signals and is not included in this issue of the CCI standard as there are no agreed standards to transmit the information. If suitable standards are defined in the future they will be included within the CCI.

#### **2.9.3.2 Communications Intelligence**

Future Capability.

### **2.9.4 Electronic Warfare**

Future capability.

### **2.9.5 Chemical, Biological, Radiological, and Nuclear (CBRN)**

UAs can carry a large set of CBRN detectors. Results of CBRN detection will be transmitted across the CCI through a standard CBRN 4 Report (see Section 3.9.4). This assumes that information required within this report is generated on board the platform or within the CUCS. Unprocessed CBRN measurements may be provided in other formats such as ANSI N42.42 (American National Standard Data Format Standard for Radiation Detectors Used for Homeland Security).

### **2.9.6 Other Payload Types**

#### **2.9.6.1 Laser Designator/Range Finder**

Future capability.

#### **2.9.6.2 Communication Relay**

Future capability.

#### **2.9.6.3 Stores/Weapons**

Future capability

## **2.10 TARGET DATA**

Near real time target data transmission across the CCI has not been included in this issue of the CCI. Target reporting requires a commander to approve the target and issue authority to fire. Concept of Operations is currently under development, and this issue may be addressed in a future update to STANAG 4586.

## **2.11 MISSION REPORTING**

1. The CUCS will provide the various C4I systems with payload dependent products; including, but not limited to, payload reports, mission status, mission progress and mission

reports. This information may have to be provided on a routine basis during the flight of the UA, on completion of the mission, on demand, or when specified threshold criteria are met.

2. Selected C4I systems may be supplied with one or more of the following types of reports:

- Reports derived from sensor processing and/or exploitation
- Mission status reports. In any kind of emergency or unexpected mission event, the ADatP-3 General Information Message (GENINFOMSG) may be used to provide information, which cannot be provided using existing ADatP-3 message text formats. This is a special message used for unusual circumstances that cannot be anticipated or planned, and should not be used on a routine basis. It is not intended to replace existing messages described in Section 2.8.
- Mission Progress reports. The ADatP-3 message MISREP may be used to report mission results and items of intelligence interest in all tactical roles. It may also be used to retransmit and/or amplify in-flight reports.
- Final Mission Report. On completion of the mission.

3. A number of ADatP-3 message reports, as listed in Section 3.11, will be used for these types of reports as appropriate.

## **2.12 GENERAL MESSAGES**

There are numerous messages contained in STANAG 5500, NATO FORMETS ADatP-3 and STANAG 7149. Several of these messages are germane to overall UCS C2 functionality and operational mission accomplishment (e.g., operational environments ranging from peacetime to Military Operations Other Than War to Wartime), but do not appropriately fit into the message categories previously discussed. Those messages that are deemed appropriate for UCS operations, but have not been identified in previous sections, are listed in Section 3.12.

### 3 CCI DATA REPRESENTATION

#### 3.1 INTRODUCTION

This section defines which standards are to be used for the data types described in Section 2. Where an ADatP-3 message is mandated, a fuller description of that message and the applicable LOI is contained in Attachment 5-2. Some of these ADatP-3 messages are designated optional and may be included as required by a particular CUCS; they are included below for completeness. CUCS shall provide capability to display to the operator all messages received as defined in the following paragraphs [CCI 0163]. For purposes of this edition of STANAG 4586, the ADatP-3 messages mandated shall be interpreted to mean ADatP-3 Build 11 messages [CCI 0009].

#### 3.2 TASKING OF THE UCS

##### 3.2.1 Tasking

The CUCS shall be capable of processing the following ADatP-3 message types in order to accomplish the Tasking function:

Index	Identifier	Format Name
A033	FM.CFF	Fire Mission-Call ForFire [CCI 0010]
A034	FM.SUB	Fire Mission-Subsequent Adjustment [CCI 0011]
A035	FM.MTO	Fire Mission-Message to Observer [CCI 0012]
A036	FM.FMC	Fire Mission-Fire Mission Command [CCI 0013]
A080	FRAGO	Fragmentary Order [CCI 0014]
F004	AIRTASK	Air Task [CCI 0015]
F015	AIRALLOC	Air Allocation Message [CCI 0016]
F043	RESPONSE	Air Support Response [CCI 0017]
F058	ATO	Air Tasking Order [CCI 0018]
J017	IFFPROD	IFF Procedures [CCI 0019]
J050	ORBATTOA LAN-AIR	Order of Battle Transfer of Authority Message-Land and Air [CCI 0020]
J051	ROEIMPL	Rules of Engagement Implementation [CCI 0021]
J060	ROEAUTH	Rules of Engagement Authorization [CCI 0022]
J065	EWSTOPJAM	Electronic Warfare Stop Jamming Message [CCI 0023]
J066	EWRTM	Electronic Warfare Requesting/Tasking Message [CCI 0024]
J070	WCO	Weapon Control Order [CCI 0025]
J076	ACTWARN	Activation Warning Message [CCI 0026]
J077	ACTREQ	Activation Request Message [CCI 0027]
J078	ACTORD	Activation Order Message [CCI 0028]

Index	Identifier	Format Name
J079	LASERWARN	Laser Target Marking Warning Message [CCI 0029]
N010	OPTASK.ASUW	Operational Tasking of Anti-Surface Warfare [CCI 0030]
N017	OPTASKLINK	Operational Tasking Data Link [CCI 0031]
N023	GREEN	Maritime Unit Execution Order [CCI 0032]
N028	OPTASK AIR	Operational Tasking Organic Aircraft [CCI 0033]
N067	OPTASK COMMS	Operational Tasking Communications [CCI 0034]
N068	OPTASK EW	Operational Tasking Electronic Warfare [CCI 0035]

**Table 5 - 12: ADatP-3 Tasking Messages**

### 3.2.2 Airspace Control

Where appropriate for the required LOI, the CUCS shall be capable of processing the following ADatP-3 message types in order to accomplish the Airspace Control function:

Index	Identifier	Format Name
A069	SPRT.ACA	Support Airspace Coordination Order [CCI 0036]
F011	ACO	Airspace Control Order [CCI 0037]
F012	ACMREQ	Airspace Control Means Request [CCI 0038]

**Table 5 - 13: ADatP-3 Airspace Control Messages**

## 3.3 AIR TRAFFIC CONTROL

For UAs that fly in controlled airspace and for LOI 4 and 5, ATS messages summarised in Section 2.3 shall be formatted as described in Appendix 3 of the ICAO document, Rules of the Air and Air Traffic Services, Doc 4444-RAC/501[CCI 0039].

## 3.4 COLLATERAL DATA

### 3.4.1 General Battlefield Picture

The CUCS shall be capable of processing the following ADatP-3 message types in order to accomplish the General Battlefield Picture:

Index	Identifier	Format Name
A026	ENSITREP	Enemy Land Forces Situation Report [CCI 0040]
A031	OWNSITREP	Own Land Forces Situation Report [CCI 0041]
A032	ORBATLAND	Order of Battle-Land Forces [CCI 0042]
A071	SYS.RFR	System-Request for Report [CCI 0043]
F001	AIRINTREP	Air Intelligence Report [CCI 0044]
F006	FAM	Friendly Air Movements [CCI 0045]

<b>Index</b>	<b>Identifier</b>	<b>Format Name</b>
F032	ORBATAIR	Order of Battle-Air Forces [CCI 0046]
J009	FIRSTHOSTILEACT	First Hostile Act Report [CCI 0047]
J015	MARINTSUM	Maritime Intelligence Summary [CCI 0048]
J016	MARINTREP	Maritime Intelligence Report [CCI 0049]
J019	AIRATTACKWARN	Air Attack Warning [CCI 0050]
J038	GEOSITREP	Geographic Situation Report [CCI 0051]
J071	TRACKREP	Target Track Report [CCI 0052]
J111	INTSUM	Intelligence Summary [CCI 0053]

**Table 5 - 14: ADatP-3 General Battlefield Picture Messages****3.4.2 Mission Dependent Data**

The CUCS shall be capable of processing the following ADatP-3 message types in order to provide Mission Dependent Data:

<b>Index</b>	<b>Identifier</b>	<b>Format Name</b>
A058	ATI.ATR	Artillery Target Intelligence-Artillery Target Report [CCI 0054]
A059	ATI.TIR	Artillery Target Intelligence-Target Information Request [CCI 0055]
A070	SPRT.GEOM	Support-Battlefield Geometry [CCI 0056]
J005	COMSPOT	Communications Spot Report [CCI 0057]
J006	INCSPOTREP	Incident Spot Report [CCI 0058]
J018	MIJIWARNREP	MIJI Warning Report [CCI 0059]
J072	COVREP	Weapon Coverage Report [CCI 0060]
J073	SENSCOVREP	Sensor Coverage Report [CCI 0061]
J110	INTREP	Intelligence Report [CCI 0062]
N003	JAMWARN	Jamming Warning [CCI 0063]
N025	LOCATOR	Maritime Force Locator [CCI 0064]

**Table 5 - 15: ADatP-3 Mission Dependent Data Messages****3.4.3 CBRN**

The CUCS shall be capable of processing the following ADatP-3 message types in order to provide CBRN Data:

<b>Index</b>	<b>Identifier</b>	<b>Format Name</b>
J171	CBRN 6 BIO	CBRN 6 Biological Report [CCI 0065]
J159	CBRN 6 CHEM	CBRN 6 Chemical Report [CCI 0164]
J185	CBRN 6 NUC	CBRN 6 Nuclear Report [CCI 0165]

<b>Index</b>	<b>Identifier</b>	<b>Format Name</b>
J177	CBRN 6 RAD	CBRN 6 Radiological Report [CCI 0166]
J178	CBRN SITREP	CBRN Situation Report [CCI 0066]
J168	CBRN 3 BIO	CBRN 3 Biological Report [CCI 0067]
J156	CBRN 3 CHEM	CBRN 3 Chemical Report [CCI 0167]
J182	CBRN 3 NUC	CBRN 3 Nuclear Report [CCI 0168]
J174	CBRN 3 RAD	CBRN 3 Radiological Report [CCI 0169]
J028	CBRN BWR	CBRN Basic Wind Report [CCI 0068]
J061	CBRN EDR	CBRN Effective Downwind Report [CCI 0071]
J169	CBRN 4 BIO	CBRN 4 Biological Report [CCI 0069]
J157	CBRN 4 CHEM	CBRN 4 Chemical Report [CCI 0170]
J183	CBRN 4 NUC	CBRN 4 Nuclear Report [CCI 0171]
J175	CBRN 4 RAD	CBRN 4 Radiological Report [CCI 0172]
J170	CBRN 5 BIO	CBRN 5 Biological Report [CCI 0070]
J158	CBRN 5 CHEM	CBRN 5 Chemical Report [CCI 0173]
J184	CBRN 5 NUC	CBRN 5 Nuclear Report [CCI 0174]
J176	CBRN 5 RAD	CBRN 5 Radiological Report [CCI 0175]
J020	CBRN CDR	CBRN Chemical/Biological Downwind Report [CCI 0176]

**Table 5 - 16: ADatP-3 CBRN Data Messages**

#### 3.4.4 Artillery Targeting

The CUCS shall be capable of processing the following ADatP-3 message types in order to support Artillery Target Intelligence reporting:

<b>Index</b>	<b>Identifier</b>	<b>Format Name</b>
A058	ATI.ATR	Artillery Target Intelligence-Artillery Target Report [CCI 0072]
A059	ATI.TIR	Artillery Target Intelligence-Target Information Request [CCI 0073]

**Table 5 - 17: ADatP-3 Artillery Target Intelligence Messages**

#### 3.4.5 Meteorological Data

The CUCS shall be capable of processing the following ADatP-3 message types in order to coordinate Meteorological Data:

Index	Identifier	Format Name
A062	MET.TA	Meteorological-Target Acquisition [CCI 0074]
A060	MET.CM	Meteorological-Computer [CCI 0075]
A061	MET.RFM	Meteorological-Request for MET [CCI 0076]

**Table 5 - 18: ADatP-3 Meteorological Data Messages**

### 3.4.6 Image Products

1. The CUCS shall provide access to external Image Product Libraries via the CCI in accordance with the interface specified in STANAG 4559 [CCI 0077].
2. The CUCS shall be capable of transmitting and receiving imagery products in STANAG 4545 format (e.g., to or from an Image Product Library) [CCI 0078]. If magnetic tape is used for delivery, the tape reader should conform to STANAG 7024 (to be superseded by STANAG 4575).
3. Inclusion of this capability is largely independent of LOI and therefore optional, but if there is a requirement for a system to access image product libraries for collateral information, then use of STANAG 4559 is mandatory.

## 3.5 MISSION PLAN

1. A complete mission plan needs to include a route plan, payload plan, data link plan, and emergency recovery plan. There is currently no international standard agreed upon that fully defines these four elements of a mission plan. However, there is an ongoing US initiative to specify a Common Route Definition (CRD) that is applicable to a route plan and a limited payload plan. The CRD specification, for reference purpose, is provided as an attachment to STANAG 4586. In the future it will also be available on a NATO Website. The website address will be provided when available.
2. To communicate with C4I systems or other UCSs, the CUCS shall be capable of transmitting and receiving mission plans in the CRD format [CCI 0080]. If a particular C4I system is not compatible with the CRD format and the CRD format is desired, a CCISM shall be used to translate to and from the CRD format [CCI 0081]. The capability to transmit and receive mission plans shall be provided for LOI 4, and is recommended for LOI 3 [CCI 0082].
3. The ROS are likely to be included in the VSM (Chapter 4) for two reasons:
  - Scenarios are likely to be specific to particular types of UAs as they depend on UA capability, etc.
  - Not all existing UAs implement ROS.

Therefore a standard for ROS is not proposed in this document.

(NOTE: It is assumed that the emergency recovery plan is not exchanged with the C4I systems.)

## 3.6 HANOVER CONTROL

This section deleted.

## 3.7 MISSION PROGRESS

The CUCS shall be capable of processing the ADatP-3 message F031, Mission Report (MISREP), to report mission progress [CCI 0088]. When appropriate, the MISREP shall include an AMPN message set to report data not included in the standard MISREP message sets [CCI 0089].

Index	Identifier	Format Name
F031	MISREP	Mission Report

**Table 5 - 19: ADatP-3 Mission Report Message**

### 3.8 RESOURCE AVAILABILITY

#### 3.8.1 Air Segment Status

The CUCS shall be capable of processing the following ADatP-3 message types in order to provide status and operational capability of the Air Segment:

Index	Identifier	Format Name
J002	ASSESSREP	Commander's Assessment Report [CCI 0091]
J029	AIRSTAT	Offensive Weapon System and Air Defence Status Report [CCI 0092]
J082	LOGASSESSREP	Logistic Assessment Report [CCI 0093]
J083	LOGUPDATE	Logistic Update Report [CCI 0094]
J095	SITREP	Situation Report [CCI 0095]
J099	CISSITREP	CIS Situation Report [CCI 0096]

**Table 5 - 20: ADatP-3 Air Segment Status and Operational Capability Messages**

#### 3.8.2 Ground Segment Status

The CUCS shall be capable of processing the following ADatP-3 message types in order to provide status and operational capability of the elements of the Ground Segment.

Index	Identifier	Format Name
A010	LOGSITLAND	Logistic Situation Report Land Forces [CCI 0097]
J002	ASSESSREP	Commander's Assessment Report [CCI 0098]
J029	AIRSTAT	Offensive Weapon System and Air Defence Status Report [CCI 0099]
J082	LOGASSESSREP	Logistic Assessment Report [CCI 0100]
J083	LOGUPDATE	Logistic Update Report [CCI 0101]
J095	SITREP	Situation Report [CCI 0102]
J099	CISSITREP	CIS Situation Report [CCI 0103]

**Table 5 - 21: ADatP-3 Ground Segment Status and Operational Capability Messages**

### 3.9 PAYLOAD/SENSOR DATA

#### 3.9.1 Overview

This section specifies the standards to be used for transmission of UA ISR payload data via the CCI.

Note: If a specific UAS does not support a particular payload type (e.g., GMTI, ELINT, etc.), the supporting UCS can still be STANAG 4586 compliant without having to implement those requirements associated with that particular payload.

### 3.9.2 Imagery Intelligence (IMINT)

The standards identified in Table 5-22 shall be used for the exchange of imagery data across the CCI. When the UCS is receiving payload data and a C4I system requires that data, the UCS shall provide the capability to disseminate payload data to the C4I system

Standard	Imagery Type
STANAG 4545	Still EO/IR [CCI 0104], MSI/ HSI [CCI 0105], and SAR [CCI 0106]
STDI-0002	Controlled extensions for STANAG 4545 metadata [CCI 0107]
STANAG 7023	Still EO/IR [CCI 0108], MSI/HSI [CCI 0109], and SAR [CCI 0110]
STANAG 4607	Ground moving target indicator [CCI 0111]
STANAG 4609	Motion EO/IR [CCI 0112], MSI/HSI [CCI 0113]

**Table 5 - 22: Imagery Standards**

#### 3.9.2.1 Still Imagery

All digital still imagery will be transmitted over the CCI using either STANAG 4545 or 7023 as appropriate. For all still imagery types, STDI-0002 will be used to record metadata describing the imagery when using STANAG 4545. However when STANAG 7023 is used, metadata describing the imagery will be captured as specified within STANAG 7023.

#### 3.9.2.2 Digital Motion Imagery

1. STANAG 4609 specifies a standard compression (MPEG-2) and means to capture metadata describing digital motion imagery. Motion imagery, whether collected as analogue or digital, shall be transmitted over the CCI using STANAG 4609 to those C4I systems requiring digital motion imagery [CCI 0115].
2. For those instances where an external CCI node requires analogue imagery, the VSM or the CCISM shall provide the necessary conversion (if any required) of the payload imagery to the format required by the respective CCI node, as discussed in Section 2.9.2.1.2.1 [CCI 0116].

#### 3.9.2.3 Multi/Hyperspectral

Multispectral and hyperspectral images consist of multiple images from different parts of the electromagnetic spectrum. Though not currently a UCS requirement, STANAG 7023 and 4545, respectively, are the controlling standards for these types of payloads.

#### 3.9.2.4 Synthetic Aperture Radar (SAR)

1. SAR images shall be transmitted across the CCI in accordance with STANAG 4545 or STANAG 7023 specified formats [CCI 0117].
2. SAR auxiliary text files shall contain support data as defined in STANAG 4545 and STDI-0002, National Imagery and Mapping Agency, “The Compendium of Controlled Extensions (CE) for the National Imagery Transmission Format (NITF)”, CMETAA Support Data Extension [CCI 0118].

#### 3.9.2.5 Ground Moving Target Indicator (GMTI)

STANAG 4607 specifies a common standard format for GMTI data. GMTI data shall be transmitted over the CCI in accordance with STANAG 4607 [CCI 0119].

### 3.9.3 ELINT

1. ELINT data and related reports shall conform to the requirements of STANAG 4633, ELINT Common Message Format (ECMF) (draft) [CCI 0120].
2. ESM data derived from analysis of enemy electronic signals shall conform to STANAG 4633 (draft) [CCI 0121].

### 3.9.4 Chemical, Biological, Radiological and Nuclear (CBRN)

The CUCS shall be capable of processing the following ADatP-3 messages to report data from a CBRN payload. Note that CBRN SITREP is not included as it is envisioned that it will be generated outside the UCS following multi-source analysis. (The CBRN SITREP is included in Section 3.4.3.)

Index	Identifier	Format Name
J166	CBRN 1 BIO	CBRN 1 Biological Report [CCI 0122]
J154	CBRN 1 CHEM	CBRN 1 Chemical Report [CCI 0177]
J180	CBRN 1 NUC	CBRN 1 Nuclear Report [CCI 0178]
J172	CBRN 1 RAD	CBRN 1 Radiological Report [CCI 0179]
J020	CBRN CDR	CBRN Chemical/Biological Downwind Report [CCI 0123]
J171	CBRN 6 BIO	CBRN 6 Biological Report [CCI 0124]
J159	CBRN 6 CHEM	CBRN 6 Chemical Report [CCI 0180]
J185	CBRN 6 NUC	CBRN 6 Nuclear Report [CCI 0181]
J177	CBRN 6 RAD	CBRN 6 Radiological Report [CCI 0182]
J167	CBRN 2 BIO	CBRN 2 Biological Report [CCI 0125]
J155	CBRN 2 CHEM	CBRN 2 Chemical Report [CCI 0183]
J181	CBRN 2 NUC	CBRN 2 Nuclear Report [CCI 0184]
J173	CBRN 2 RAD	CBRN 2 Radiological Report [CCI 0185]
J168	CBRN 3 BIO	CBRN 3 Biological Report [CCI 0126]
J156	CBRN 3 CHEM	CBRN 3 Chemical Report [CCI 0186]
J182	CBRN 3 NUC	CBRN 3 Nuclear Report [CCI 0187]
J174	CBRN 3 RAD	CBRN 3 Radiological Report [CCI 0188]
J028	CBRN BWR	CBRN Basic Wind Report [CCI 0127]
J061	CBRN EDR	CBRN Effective Downwind Report [CCI 0130]
J169	CBRN 4 BIO	CBRN 4 Biological Report [CCI 0128]
J157	CBRN 4 CHEM	CBRN 4 Chemical Report [CCI 0189]
J183	CBRN 4 NUC	CBRN 4 Nuclear Report [CCI 0190]
J175	CBRN 4 RAD	CBRN 4 Radiological Report [CCI 0191]
J170	CBRN 5 BIO	CBRN 5 Biological Report [CCI 0129]

<b>Index</b>	<b>Identifier</b>	<b>Format Name</b>
J158	CBRN 5 CHEM	CBRN 5 Chemical Report [CCI 0192]
J184	CBRN 5 NUC	CBRN 5 Nuclear Report [CCI 0193]
J176	CBRN 5 RAD	CBRN 5 Radiological Report [CCI 0194]

**Table 5 - 23: ADatP-3 CBRN Data Messages****3.9.5 Other Payload Types****3.9.5.1 Laser Designator/Range Finder**

Future Capability.

**3.10 TARGET DATA**

Formats for near real time target data may be included in a future issue of Chapter 5.

**3.11 MISSION REPORTING**

Where appropriate, the CUCS shall be capable of processing the following ADatP-3 messages to report the results from a mission:

<b>Index</b>	<b>Identifier</b>	<b>Format Name</b>
A046	OBSREP	Obstacle Report [CCI 0131]
A088	RBTRTECCEREP	Road, Bridge or Tunnel Reconnaissance Report [CCI 0132]
A092	GAPRECCEREP	GAP Reconnaissance Report [CCI 0133]
A100	OBSRECCEREP	Obstacle Reconnaissance Report [CCI 0134]
F031	MISREP	Mission Report [CCI 0135]
J064	EWMSNSUM	Electronic Warfare Mission Summary [CCI 0136]
J101	COMPASSESSREP	Compliance Assessment Report [CCI 0137]
J103	RECCEXREP	Reconnaissance Exploitation Report [CCI 0138]
N024	PURPLE	Maritime Mission Summary Report [CCI 0139]

**Table 5 - 24: ADatP-3 Mission Results Messages****3.12 GENERAL MESSAGES**

There are a number of messages that do not appropriately belong in any of the message categories discussed in the previous sections, but that are applicable to UCS functionality and may be necessary to support a given LOI. Attachment 5-2 defines whether they are mandated or optional for a given LOI. Where appropriate the CUCS shall be capable of processing the following ADatP-3 messages:

<b>Index</b>	<b>Identifier</b>	<b>Format Name</b>
A009	PRESENCE	Presence Report [CCI 0140]
A027	LOGASREQ	Logistic Assistance Request [CCI 0141]
A028	LOGASRESP	Logistic Assistance Response [CCI 0142]

<b>Index</b>	<b>Identifier</b>	<b>Format Name</b>
A057	MAPREQ	Map Request [CCI 0143]
A072	SYS.RRM	System Reply Message [CCI 0144]
F087	MOVEREQ	Movement Request [CCI 0145]
F088	MWO	Movement Warning Order [CCI 0146]
F089	MEO	Movement Execution Order [CCI 0147]
F090	MCR	Movement Completion Report [CCI 0148]
J001	MSGCORRCANX	Message Correction or Cancellation [CCI 0149]
J003	GENINFOMSG	General Information Message [CCI 0150]
J012	SARIR	Search and Rescue Incident Report [CCI 0151]
J013	SARREQ	Search and Rescue Request [CCI 0152]
J021	INTREQ	Intelligence Request [CCI 0153]
J052	ROEREQ	Rules of Engagement Request [CCI 0154]
J092	EVENTREP	Events Report [CCI 0155]
J112	CIINTREP	Counter-Intelligence and Security Report [CCI 0156]
J113	CIINTSUM	Counter-Intelligence and Security Summary [CCI 0157]
J114	SUPINTREP	Supplementary Intelligence Report [CCI 0158]
J115	CISUPINTREP	Counter-Intelligence and Security Supplementary Report [CCI 0159]
N033	SATVULREP	Satellite Vulnerability Report [CCI 0160]

**Table 5 - 25: ADatP-3 General Messages**

## **Attachment 5 - 1: INFORMATION EXCHANGE REQUIREMENTS**

This section contains the Information Exchange Requirements imposed on the UCS and hence on the CCI which, excluding the DLI, represents the external interface to the UCS.

### **NOTES:**

**Note 1** “Tx” indicates that this function/product is transmitted from the UCS. “Rx” indicates that this function/product is received by the UCS.

**refers to  
the  
Product/**

**Action**

**Column of  
the IER**

**Note 2** The following provides the descriptions of the various Universal Joint Task List (UJTL) numbers identified in this document.

**refers to  
the  
Rationale  
(UJTL#)**

**Column of  
the IER**

- ST 2.2.1 Collect Information on Theatre Strategic Situation
- ST 2.4.2.2 Provide Theatre Current Intelligence
- ST 2.4.2.4 Provide Target Intelligence for Theatre Planning and Execution
- ST 5.1.4 Monitor Worldwide and Theatre Strategic Situation
- OP 1.2.5 Conduct Offensive Operations in the Joint Operations Area
- OP 1.3.2 Enhance Movement of Operational Forces
- OP 2.1.3 Prepare Operational Collection Plan
- OP 2.2 Collect and Share Operational Information
- OP 2.2.1 Collect Information on Operational Situation
- OP 2.2.3 Collect and Assess METOC Information
- OP 2.2.5 Collect Target Information
- OP 2.4 Produce Operational Intelligence and Prepare Intelligence Products
- OP 2.4.2.1 Provide Indications and Warnings for the Joint Operations Area
- OP 2.4.2.2 Provide Current Intelligence for the Joint Operations Area
- OP 2.4.2.4 Provide Target Intelligence for the Joint Operations Area
- OP 2.5 Disseminate and Integrate Operational Intelligence
- OP 2.5.3 Provide Near Real Time Intelligence for the Joint Operations Area Planners and Decision Makers

**NOTES:**

- OP 3.1.3 Develop Operational Targets
- OP 3.1.6.1 Assess Battle Damage on Operational Targets
- OP 5.1.4 Maintain Operational Information and Force Status
- OP 5.1.5 Monitor Strategic Situation
- OP 5.2 Assess Operational Situation
- OP 5.2.1 Review Current Situation
- TA 1.2.2 Conduct Joint Airborne Operations
- TA 2.2 Obtain and Access Intelligence Information
- TA 3.1 Process Targets
- TA 5.1 Acquire and Communicate Information and Maintain Status and Force Reporting
- TA 5.2.1 Establish, Operate, and Maintain Baseline Communications

**Note 3** This indicates the operating LOI of the UCS.

**refers to**

**the LOI**

**Column of**

**the IER**

UNMANNED AIRCRAFT CONTROL SYSTEM (UCS) COMMAND AND CONTROL INTERFACE (CCI) -INFORMATION EXCHANGE REQUIREMENTS (IER) MATRIX-										
Product/ Action <sup>(1)</sup>	Rationale (UJTL#) <sup>(2)</sup>	LOI <sup>(3)</sup>	NATO or Internat'l Standard	Format	Remarks	Info/Char	Sending Node	Receiving Node	Critical	Timeliness
<b>TASKING</b> Identified in sections 2.2. and 3.2.										
Airspace Control Order (Rx)	ST 5.1.4, OP 2.2.5	4, 5	STANAG 5500 (ADatP-3) ACO	Tactical Msg		Restricted flight zones: 4-Dimension	JFACC; Any capable ATM node	UCS	Yes; may not always be required	Variable; Minutes to Hours
Tasking Orders (Rx)	ST 2.2.1, ST 2.4.2.2, ST 2.4.2.4, ST 5.1.4	2, 3, 4, 5	STANAG 5500 (ADatP-3)	Tactical Msg(s)	At min. mandatory fields: (e.g., ATO Msg.)	UA Mission Tasking; Route, Pyld. Comm. Plan	JFACC or any properly equipped C2 Node	UA Det or System	Yes	Variable; Minutes to Hours
E-Mail Messages (Rx)	OP 2.2.1 OP 2.2.5	2, 3, 4, 5	SMTP	Text Message		Min. Mission Plan, e.g. route/target area	Any authorized C2 Node	UA Det or System	Yes	Variable; Minutes to Hours
Sensor Tasking/Re-tasking (Rx)	OP 2.2.5, OP 2.4.2.2, OP 2.5.3	2, 3, 4, 5	STANAG 5500 (ADatP-3) SMTP	Tactical Msg, Text Msg		New Plan for Sensor, e.g. AOI, dwell time, etc.	Any authorized C2 Node	UA Det or System	No. Dependent on mission	Variable; Minutes to Hours
Voice Tasking (Rx)	OP 2.2.5, OP 2.4.2.2, OP 2.5.3	2, 3, 4, 5	APP-11	Voice		Mission Tasking	Any authorized C2 Node	UA Det or System	Yes	Variable; Minutes to Hours

<b>UNMANNED AIRCRAFT CONTROL SYSTEM (UCS) COMMAND AND CONTROL INTERFACE (CCI)</b> <b>-INFORMATION EXCHANGE REQUIREMENTS (IER) MATRIX-</b>										
<b>Product/ Action <sup>(1)</sup></b>	<b>Rationale (UJTL#) <sup>(2)</sup></b>	<b>LOI <sup>(3)</sup></b>	<b>NATO or Internat'l Standard</b>	<b>Format</b>	<b>Remarks</b>	<b>Info/Char</b>	<b>Sending Node</b>	<b>Receiving Node</b>	<b>Critical</b>	<b>Timeliness</b>
<b>AIR TRAFFIC CONTROL</b> Identified in sections 2.3 and 3.3.										
ATS Messages (Tx/Rx)	ST 5.1.4, OP 2.2.5	4, 5	DOC 4444- RAC/501	Tactical Msg(s)	For operations in civil airspace.	Corridors, Routes, Plan Changes, etc.	JFACC; Any capable ATM node, UCS	JFACC; Any capable ATM node, UCS	Yes; may not always be required	Variable; Minutes to Hours
E-Mail Messages (Tx./Rx)	ST 5.1.4, OP 2.2.5	4, 5	SMTP	Text Message		Corridors, Routes, etc.	JFACC; Any capable ATM node, UCS	JFACC; Any capable ATM node, UCS	No – unless Tactical Msgs not available	Variable; Minutes to Hours

UNMANNED AIRCRAFT CONTROL SYSTEM (UCS) COMMAND AND CONTROL INTERFACE (CCI) -INFORMATION EXCHANGE REQUIREMENTS (IER) MATRIX-										
Product/ Action <sup>(1)</sup>	Rationale (UJTL#) <sup>(2)</sup>	LOI <sup>(3)</sup>	NATO or Internat'l Standard	Format	Remarks	Info/Char	Sending Node	Receiving Node	Critical	Timeliness
<b>COLLATERAL DATA</b> Identified in sections 2.4 and 3.4.										
Tactical Situation (Rx)	OP 2.2.1, OP 5.1.4, OP 5.1.5, TA 5.1	2, 3, 4, 5 (May be LOI 1 for some msgs. See AdatP-3 Impl Table)	STANAG 5500 (AdatP-3)	Tactical Msg, Text Msg	Includes, but not limited to Enemy and Friendly Order of Battle and SitReps	Blue/Red Force Location, charact/OB Map Overlay Data	Any C2 node having data	UCS	Yes	Variable; Minutes to Hours
Hostile Systems (Tx/Rx)	OP 3.1.3	2, 3, 4, 5	STANAG 5500 (AdatP-3)	Tactical Msg		Location & Charact. Of threat(s)	Any C2 node having data	UCS	Yes	Variable; Minutes to Hours
Target Database (Update) (Tx/Rx)	TA 3.1, OP 2.4.2.4	2, 3, 4, 5	STANAG 5500 (AdatP-3)	Tactical Msg, Data		Loc. & type Of all tgts.	UCS; Any C2 node having Tgt data	UCS; Any C2 node having Tgt data	Depends on mission	Variable; Minutes to Hours
Meteorological Data (Tx/Rx)	OP 2.2.3	2, 3, 4, 5	STANAG 5500 (AdatP-3)	Tactical Msg, Text Msg		Met. Data for specified location	UCS; Any C2 node having Met data	UCS; Any C2 node having Met data	Depends on mission	Variable; Minutes to Hours
CBRN Data (Tx/Rx)	ST 2.2.1, OP 2.2	2, 3, 4, 5	STANAG 5500 (AdatP-3)	Tactical Msg, Text Msg		CBRN Data for specified location	UCS; any C2 node having CBRN data	UCS; any C2 node having CBRN data	Depends on mission	Variable; Minutes to Hours

<b>UNMANNED AIRCRAFT CONTROL SYSTEM (UCS) COMMAND AND CONTROL INTERFACE (CCI)</b> <b>-INFORMATION EXCHANGE REQUIREMENTS (IER) MATRIX-</b>										
<b>Product/ Action <sup>(1)</sup></b>	<b>Rationale (UJTL#) <sup>(2)</sup></b>	<b>LOI <sup>(3)</sup></b>	<b>NATO or Internat'l Standard</b>	<b>Format</b>	<b>Remarks</b>	<b>Info/Char</b>	<b>Sending Node</b>	<b>Receiving Node</b>	<b>Critical</b>	<b>Timeliness</b>
Image Products (Tx/Rx)	OP 2.5	1, 2, 3, 4, 5	STANAG 4559	Digital Imagery		Digital	Any C2 Node having an - IL	UCS	Depends on mission; yes for most RSTA	Variable; Minutes to Hours

UNMANNED AIRCRAFT CONTROL SYSTEM (UCS) COMMAND AND CONTROL INTERFACE (CCI) -INFORMATION EXCHANGE REQUIREMENTS (IER) MATRIX-										
Product/ Action <sup>(1)</sup>	Rationale (UJTL#) <sup>(2)</sup>	LOI <sup>(3)</sup>	NATO or Internat'l Standard	Format	Remarks	Info/Char	Sending Node	Receiving Node	Critical	Timeliness
<b>MISSION PLAN</b> Identified in sections 2.5 and 3.5. (For mission plan that is transmitted to C2 for Response to ATO or externally generated mission plan)										
Flight Route (Tx/Rx)	OP 2.4.2.2, OP 2.5.3	3, 4, 5	CRD (STANAG is TBD)	Tactical Msg, Text Msg	Internat'l Filing Format	Waypoints, recovery plan, etc. Loaded to AV	UCS, JFACC, or any capable C2 node	UCS, JFACC, or any capable C2 node	Yes; may not always be required	Variable; Minutes to Hours
Collection Data Plan (Tx/Rx)	OP 2.1.3	3, 4, 5	CRD (STANAG is TBD)	Tactical Msg, Text Msg	To/from AMPS	Payload plan data; formatted message or e-mail	UCS, JFACC, or any capable C2 node	UCS, JFACC, or any capable C2 node	Yes; may not always be required	Variable; Minutes to Hours
Comm Plan (Tx/Rx)	OP 2.5.3	3, 4, 5	CRD (STANAG is TBD)	Tactical Msg, Text Msg		Data Link plan data	UCS	UCS, JFACC, or any capable C2 node	Yes; may not always be required	Variable; Minutes to Hours
Emergency Recovery Plan		3, 4, 5	CRD (STANAG is TBD)	Tactical Msg(s), Text Msgs		Emergency Recovery Plan	UCS	UCS, JFACC, or any capable C2 node	Yes; may not always be required	Variable; Minutes to Hours

UNMANNED AIRCRAFT CONTROL SYSTEM (UCS) COMMAND AND CONTROL INTERFACE (CCI) -INFORMATION EXCHANGE REQUIREMENTS (IER) MATRIX-										
Product/ Action <sup>(1)</sup>	Rationale (UJTL#) <sup>(2)</sup>	LOI <sup>(3)</sup>	NATO or Internat'l Standard	Format	Remarks	Info/Char	Sending Node	Receiving Node	Critical	Timeliness
<b>MISSION PROGRESS</b> Identified in sections 2.7 and 3.7.										
Tactical Messages (Tx/Rx)	OP 2.4.2.1, OP 5.1.4, OP 5.2.1	2, 3, 4, 5	STANAG 5500 (ADatP-3)	Tactical Msg		UA Position, Sys. Status, Pyld Status, etc.	UCS	UCS; any capable C2 node	Yes	Near real time
<b>RESOURCE AVAILABILITY</b> Identified in sections 2.8 and 3.8. (Includes entire system availability, including both air segment and ground segment.)										
UAV Status (Tx/Rx)	OP 5.2.1, TA 5.1	1, 2, 3, 4, 5	STANAG 5500 (ADatP-3)	Tactical Msg, Text Msg	Including payload status.	UA Status, Pyld availability	UA, UCS	UCS; any capable C2 node	Yes	Variable; Minutes to Hours
Data Link Status (Tx/Rx)	OP 5.2.1, TA 5.1	1, 2, 3, 4, 5	STANAG 5500 (ADatP-3)	Tactical Msg, Text Msg	Including Air and Control Data Terminals	D/L type & availability	Data Links, UCS	UCS; any capable C2 node	Yes	Variable; Minutes to Hours
UCS Status (Tx)	OP 5.2.1, TA 5.1	1, 2, 3, 4, 5	STANAG 5500 (ADatP-3)	Tactical Msg, Text Msg		UCS capability & status	UCS	Any capable C2 node	Yes	Variable; Minutes to Hours
Launch and Recovery Sys (Tx/Rx)	OP 5.2.1, TA 5.1	1, 2, 3, 4, 5	STANAG 5500 (ADatP-3)	Tactical Msg, Text Msg		Launch and Recovery Sys capability & status	Launch and Recovery Systems, UCS	UCS; any capable C2 node	Yes	Variable; Minutes to Hours

<b>UNMANNED AIRCRAFT CONTROL SYSTEM (UCS) COMMAND AND CONTROL INTERFACE (CCI)</b> <b>-INFORMATION EXCHANGE REQUIREMENTS (IER) MATRIX-</b>										
<b>Product/ Action <sup>(1)</sup></b>	<b>Rationale (UJTL#) <sup>(2)</sup></b>	<b>LOI <sup>(3)</sup></b>	<b>NATO or Internat'l Standard</b>	<b>Format</b>	<b>Remarks</b>	<b>Info/Char</b>	<b>Sending Node</b>	<b>Receiving Node</b>	<b>Critical</b>	<b>Timeliness</b>
Maint. and Refurb Sys (Tx/Rx)	OP 5.2.1, TA 5.1	1, 2, 3, 4, 5	STANAG 5500 (ADatP-3)	Tactical Msg, Text Msg			UCS	UCS; any capable C2 node	No	Variable; Minutes to Hours

UNMANNED AIRCRAFT CONTROL SYSTEM (UCS) COMMAND AND CONTROL INTERFACE (CCI) -INFORMATION EXCHANGE REQUIREMENTS (IER) MATRIX-										
Product/ Action <sup>(1)</sup>	Rationale (UJTL#) <sup>(2)</sup>	LOI <sup>(3)</sup>	NATO or Internat'l Standard	Format	Remarks	Info/Char	Sending Node	Receiving Node	Critical	Timeliness
PAYLOAD/SENSOR DATA (Primary and Secondary) Identified in sections 2.9 and 3.9										
Digital Data (Tx/Rx)										
EO/IR Motion Imagery	OP 2.2.5, OP 2.4	1, 2, 3, 4, 5	STANAG 4609; MPEG2 ISO/IEC 13818-1 to – 3	Encoded or Decoded imagery stream	EO/IR Framing Line Scan Sensor	Continuous video and telemetry as the UA transmits	UCS	UCS; any capable C4 node	Yes	Variable; Seconds to Hours
EO/IR Still Imagery	OP 2.2.5, OP 2.4	1, 2, 3, 4, 5	STANAG 7023 STANAG 4545 STDI-0002	Still Imagery	NITF 2.0/2.1	UCS processed/a nnnotated imagery	UCS	UCS; any capable C4 node	Yes	Variable; Seconds to Hours

UNMANNED AIRCRAFT CONTROL SYSTEM (UCS) COMMAND AND CONTROL INTERFACE (CCI) -INFORMATION EXCHANGE REQUIREMENTS (IER) MATRIX-										
Product/ Action <sup>(1)</sup>	Rationale (UJTL#) <sup>(2)</sup>	LOI <sup>(3)</sup>	NATO or Internat'l Standard	Format	Remarks	Info/Char	Sending Node	Receiving Node	Critical	Timeliness
SAR Processed	OP 2.2.5, OP 2.4	1, 2, 3, 4, 5	STANAG 7023 STANAG 4545 STDI-0002	Encoded Imagery Stream Or Still Imagery	SAR Data formed into an image	Continuous video and telemetry as the UA transmits Or UCS processed/annotated imagery	UCS	UCS; any capable C4 node	No (If other imagery available)	Variable; Seconds to Hours
GMTI Processed	OP 2.2.5, OP 2.4	1, 2, 3, 4, 5	STANAG 4607	MTI Tracks & Vectors		Continuous data as the UA transmits	UCS	UCS; any capable C4 node	No (If other imagery available)	Variable; Seconds to Hours
MSI, HSI	OP 2.2.5, OP 2.4	1, 2, 3, 4, 5	STANAG 4545 STANAG 7023		Future Implement					
ELINT and ESM	OP 2.2.5, OP 2.4	1, 2, 3, 4, 5	STANAG 4633			Continuous data as the UA transmits	UCS	UCS; any capable C4 node	Yes	Variable; Seconds to Hours
CBRN Data	OP 2.2.5, OP 2.4	1, 2, 3, 4, 5	TBD			Continuous data as the UA transmits	UCS	UCS; any capable C4 node	No (If other data available)	Variable; Seconds to Hours
COMINT	OP 2.2.5, OP 2.4	1, 2, 3, 4, 5	TBD		Future Implement					

<b>UNMANNED AIRCRAFT CONTROL SYSTEM (UCS) COMMAND AND CONTROL INTERFACE (CCI)</b> <b>-INFORMATION EXCHANGE REQUIREMENTS (IER) MATRIX-</b>										
<b>Product/ Action <sup>(1)</sup></b>	<b>Rationale (UJTL#) <sup>(2)</sup></b>	<b>LOI <sup>(3)</sup></b>	<b>NATO or Internat'l Standard</b>	<b>Format</b>	<b>Remarks</b>	<b>Info/Char</b>	<b>Sending Node</b>	<b>Receiving Node</b>	<b>Critical</b>	<b>Timeliness</b>
Weapon Payloads – Unmanned Combat Aerial Vehicles (UCAV) Platforms					Future Implement					
TARGET DATA - Deferred until future update and implementation of STANAG 4586.										
Identified in sections 2.10 and 3.10.										
MISSION REPORTING										
Identified in sections 2.11 and 3.11.										
Mission Status (Tx/Rx)	OP 2.2.1, OP 5.2, TA 5.1	1, 2, 3, 4, 5 (May be only 2, 3, 4, 5 for some msgs. See ADatP-3 Impl Table)	STANAG 5500 (ADatP-3) SMTP	Tactical Msg, Text Msg		Tasked Mission Status, (pending, in progress, etc.)	UCS	UCS; any capable C2 node	Yes	Variable; Minutes to Hours
Target, Collection Coordinate (Tx/Rx)	OP 2.2.5, TA 3.1	2, 3, 4, 5	STANAG 5500 (ADatP-3)	Tactical Msg		UA detected target data	UCS	UCS; any capable C2 node	Yes	Variable; Seconds to Hours

UNMANNED AIRCRAFT CONTROL SYSTEM (UCS) COMMAND AND CONTROL INTERFACE (CCI) -INFORMATION EXCHANGE REQUIREMENTS (IER) MATRIX-										
Product/ Action <sup>(1)</sup>	Rationale (UJTL#) <sup>(2)</sup>	LOI <sup>(3)</sup>	NATO or Internat'l Standard	Format	Remarks	Info/Char	Sending Node	Receiving Node	Critical	Timeliness
Battlefield Geometry (Tx/Rx)	OP 5.1.5	2, 3, 4, 5	STANAG 5500 (ADatP-3)	Tactical Msg		Order Of Battle	UCS	UCS; any capable C2 node	Yes	Variable; Minutes to Hours
Recon Rpts (Tx)	OP 2.4, OP 2.5	1, 2, 3, 4, 5 (May be only 2, 3, 4, 5 for some msgs. See ADatP-3 Impl Table)	STANAG 5500 (ADatP-3)	Tactical Msg		Summary Reports (mission, communications, EW, etc.)	UCS	UCS; any capable C2 node	Yes	Variable; Minutes to Hours
Battle Damage Reports (Tx)	OP 3.1.6.1	1, 2, 3, 4, 5 (May be only 2, 3, 4, 5 for some msgs. See ADatP-3 Impl Table)	STANAG 5500 (ADatP-3)	Tactical Msg, Video, Imagery	Can be via tactical msg, or BDA imagery.	Damage assessment report	UCS	UCS; any capable C2 node	Yes	Variable; Minutes to Hours
MISCELLANEOUS										

UNMANNED AIRCRAFT CONTROL SYSTEM (UCS) COMMAND AND CONTROL INTERFACE (CCI) -INFORMATION EXCHANGE REQUIREMENTS (IER) MATRIX-										
Product/ Action <sup>(1)</sup>	Rationale (UJTL#) <sup>(2)</sup>	LOI <sup>(3)</sup>	NATO or Internat'l Standard	Format	Remarks	Info/Char	Sending Node	Receiving Node	Critical	Timeliness
LAN Connection	TA 5.2.1	1, 2, 3, 4, 5	ISO/IEC 8802-3, ANSI/IEEE Std 802.3 (DOD JTA, protocols)	Imagery, Text, Voice, Video, Data	Includes protocols (e.g., TCP, UDP, IP, SMTP, FTP, NFS, MIME, etc.) (Chapter 3)	N/A	N/A	N/A	Yes	N/A
IPL (IL) Interface (Rx)	OP 2.2	1, 2, 3, 4, 5	STANAG 4559	Imagery	Inherent use of CORBA	NSIF imagery files from IL	IL	UCS	Yes	Variable; Seconds to Hours
Digital Voice (Tx/Rx)	TA 5.2.1	1, 2, 3, 4, 5	H.323	Voice	Voice over IP		UCS; any capable C4 node	UCS; any capable C4 node	No	Real Time

**Attachment 5 - 2: ADatP-3 BUILD 11 MESSAGE IMPLEMENTATION REQUIREMENTS**

1. The table provided in this attachment contains the list of ADatP-3 Build 11 messages that are applicable to the UCS. Each message is identified, its function or purpose summarised, and its applicable LOI stated.
2. Index Ref. No – This column contains the Index Reference Number as listed in ADatP-3. This column also indicates the transmission (Tx) or receipt (Rx) requirements of the UCS.
3. MTF Identifier – This column contains the Message Text Format Identifier as listed in ADatP-3.
4. MTF Name – This column contains the Message Text Format Name as listed in ADatP-3.
5. Function or purpose – This column contains the Function or Purpose as listed in ADatP-3.
6. LOI – This column contains the applicable LOI associated with each message. This number refers to the lowest level at which the message is mandatory. Below this number, implementation is optional (refer to the remarks in Section 1.6, Implementation of UA LOI in the CCI).
7. Comments – This column contains general comments and cross-references to paragraphs in Chapter 3 and Chapter 5, where applicable.

<b>Index Ref No</b>	<b>MTF Identifier</b>	<b>MTF Name</b>	<b>Function or purpose</b>	<b>LOI</b>	<b>Comments</b>
A009 (Tx)	PRESENCE	Presence Report	The PRESENCE report is used to inform a commander on the deployment of military organisations within his area of responsibility. The report addresses both organisations under his command and those that are not.	Optional	Para 3.12 General Msg
A010 (Tx)	LOGSITLAND	Logistic Situation Report Land Forces	The LOGSITLAND is used to provide a superior headquarters with an evaluation of a units or formation's logistical situation, capability, and deficiencies/surpluses.	Optional	Para 3.8.2 Resource Availability, Gnd Seg Status
A026 (Tx/Rx)	ENSITREP	Enemy Land Forces Situation Report	The ENSITREP is used to report and inform on the enemy forces situation, to include: locations, activities, boundaries, status, order of battle (ORBAT) and subordination of units/formations.	2, 3, 4, 5	Para 3.4.1 Collateral data, Gen Battlefield Pic
A027 (Tx)	LOGASREQ	Logistics Assistance Request	The LOGASREQ is used by land forces to request logistics assistance.	Optional	Para 3.12 General Msg
A028 (Rx)	LOGASRESP	Logistics Assistance Response	The LOGASRESP is used by land forces to respond to a request for logistics assistance.	Optional	Para 3.12 General Msg
A031 (Tx/Rx)	OWNSITREP	Own Land Forces Situation Report	The OWNSITREP is used to report factors affecting the situation, deployment, status and/or order of battle of own and subordinate units.	2, 3, 4, 5	Para 3.4.1 Collateral Data, Gen Battlefield Pic

<b>Index Ref No</b>	<b>MTF Identifier</b>	<b>MTF Name</b>	<b>Function or purpose</b>	<b>LOI</b>	<b>Comments</b>
A032 (Rx)	ORBATLAND	Order of Battle - Land Forces	The ORBATLAND is used to inform major NATO commanders (MNCs)/strategic commanders (SCs) and other NATO commanders in peacetime and in periods of crisis and war of changes in the order of battle land forces and thereby to assure that the most current information is available for operational planning.	4, 5	Para 3.4.1 Collateral Data, Gen Battlefield Pic
A033 (Tx)	FM.CFF	Fire Mission-Call For Fire	The FM.CFF is used to transmit initial fire for effect requests and/or orders to fire.	3	Para 3.2.1 Tasking
A034 (Tx)	FM.SUB	Fire Mission-Subsequent Adjustment	The FM.SUB is used to transmit updated grid locations, to repeat fire for effect and/or to terminate missions.	3	Para 3.2.1 Tasking
A035 (Tx/Rx)	FM.MTO	Fire Mission-Message to Observer	The FM.MTO is used to transmit a message to observer in response to a call for fire on a target of opportunity.	3	Para 3.2.1 Tasking
A036 (Tx)	FM.FMC	Fire Mission-Fire Mission Command	The FM.FMC is used to transmit a fire mission command to a fire unit or an observer.	3	Para 3.2.1 Tasking
A046 (Tx/Rx)	OBSREP	Obstacle Report	The OBSREP is used to report obstacles up the chain of command	2, 3, 4, 5	Para 3.11 Mission Reporting
A057 (Tx/Rx)	MAPREQ	Map Request	The MAPREQ is used to submit requests for map coverage.	Optional	Para 3.12 General Msg
A058 (Tx/Rx)	ATI.ATR	Artillery Target Intelligence-Artillery Target Report	The ATI.ATR is used to transmit targets by target type based on a standing request for information or a one-time query for target information resulting from an ATI.ATR message. It will also be used to establish or delete target information.	2, 3, 4, 5	Para 3.4.2 Collateral Data, Mission Dependent

<b>Index Ref No</b>	<b>MTF Identifier</b>	<b>MTF Name</b>	<b>Function or purpose</b>	<b>LOI</b>	<b>Comments</b>
A059 (Rx)	ATI.TIR	Artillery Target Intelligence-Target Information Request	The ATI.TIR is used to request target information either as a one-time query or as a standing request for target information.	2, 3, 4, 5	Para 3.4.2 Collateral Data, Mission Dependent
A060 (Rx)	MET.CM	Meteorological-Computer	The MET.CM is used to transmit computer meteorological data.	2, 3, 4, 5	Para 3.4.4 Collateral Data, MET
A061 (Tx/Rx)	MET.RFM	Meteorological-Request For Met	The MET.RFM is used to request meteorological support.	2, 3, 4, 5	Para 3.4.4 Collateral Data, MET
A062 (Tx/Rx)	MET.TA	Meteorological-Target Acquisition	The MET.TA is used to transmit meteorological data for target acquisition purposes.	2, 3, 4, 5	Para 3.4.4 Collateral Data, MET
A069 (Tx/Rx)	SPRT.ACA	Support-Airspace Coordination Area	The SPRT.ACA is used to establish or delete airspace coordination areas (ACA).	4, 5	Para 3.2.2 Airspace Control
A070 (Tx/Rx)	SPRT.GEOM	Support-Battlefield Geometry	The SPRT.GEOM is used to establish or delete battlefield geometries (e.g., avenue of approach, axis of advance, target areas, zone of fire) in support of land combat operations for current operations or for a fire plan.	2, 3, 4, 5	Para 3.4.2 Collateral Data, Mission Dependent
A071 (Tx/Rx)	SYS.RFR	System-Request For Report	The SYS.RFR is 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.	2, 3, 4, 5	Para 3.4.1 Collateral Data, Gen Battlefield Pic

<b>Index Ref No</b>	<b>MTF Identifier</b>	<b>MTF Name</b>	<b>Function or purpose</b>	<b>LOI</b>	<b>Comments</b>
A072 (Tx/Rx)	SYS.RRM	System Reply Message	The SYS.RRM is used to transmit a reply to a received message.	1, 2, 3, 4, 5	Para 3.12 General Messages
A080 (Rx)	FRAGO	Fragmentary Order	The FRAGO is used to issue key sections of an operation order before the complete order has been produced; provide specific instructions to commanders who do not require the complete operation order; provide a summary of the complete order to serve as confirmatory notes; issue timely changes to existing operation orders or provide an outline operational directive (mission order) for use in fast moving mobile operations.	1, 2, 3, 4, 5	Para 3.2.1 Tasking
A088 (Tx/Rx)	RBTRECCEREP	Road, Bridge or Tunnel Reconnaissance Report	The RBTRECCEREP is used to report the results of a technical reconnaissance of a road, bridge or tunnel along a section of a route.	2, 3, 4, 5	Para 3.11 Mission Reporting
A092 (Tx/Rx)	GAPRECCEREP	Gap Reconnaissance Report	The GAPRECCEREP is used to report the results of a gap crossing site reconnaissance.	2, 3, 4, 5	Para 3.11 Mission Reporting
A100 (Tx/Rx)	OBSRECCEREP	Obstacle Reconnaissance Report	The OBSRECCEREP is used to report the results of a reconnaissance of enemy or friendly obstacles, existing or planned.	2, 3, 4, 5	Para 3.11 Mission Reporting
F001 (Rx)	AIRINTREP	Air Intelligence Report	The AIRINTREP is used to inform SHAPE and ACE commanders of changes in the location, disposition, status and other essential elements of information concerning non-NATO air order of battle.	4, 5	Para 3.4.1 Collateral Data, Gen Battlefield Pic

<b>Index Ref No</b>	<b>MTF Identifier</b>	<b>MTF Name</b>	<b>Function or purpose</b>	<b>LOI</b>	<b>Comments</b>
F004 (Rx)	AIR TASK	Air Task	The AIRTASK is used to task tactical air support including support for land or maritime operations.	2, 3, 4, 5	Para 3.2.1 Tasking
F006 (Rx)	FAM	Friendly Air Movements	The FAM is used to inform units of civil and military air movements in their area of interest which are not part of tactical air support for maritime operations (TASMO) or carrier operations.	Optional	Para 3.4.1 Collateral Data, Gen Battlefield Pic
F011 (Rx)	ACO	Airspace Control Order	The ACO is used to provide specific detailed orders for airspace management and control from a higher command to subordinate units	4, 5	Para 3.2.2 Airspace Control
F012 (Tx/Rx)	ACMREQ	Airspace Control Means Request	The ACMREQ is used to request that a specific airspace control means be specified in a future airspace control order.	4, 5	Para 3.2.2 Airspace Control
F015 (Rx)	AIRALLOC	Air Allocation Message	The AIRALLOC is used to inform subordinate units, formations and/or tasking agencies of the air effort allocated.	2, 3, 4, 5	Para 3.2.1 Tasking
F031 (Tx/Rx)	MISREP	Mission Report	The MISREP is used to report mission results and items of intelligence interest in all tactical roles and to retransmit and/or amplify in-flight reports.	2, 3, 4, 5	Para 3.7 & 3.11 Mission Progress & Mission Reporting
F032 (Rx)	ORBATAIR	Order of Battle - Air Forces	The ORBATAIR is used to inform major NATO commanders (MNCs)/strategic commanders (SCs) and other NATO commanders in peacetime and in periods of crisis and war of changes in the order of battle air forces and thereby to assure that the most current information is available for operational planning.	4, 5	Para 3.4.1 Collateral Data, Gen Battlefield Pic

<b>Index Ref No</b>	<b>MTF Identifier</b>	<b>MTF Name</b>	<b>Function or purpose</b>	<b>LOI</b>	<b>Comments</b>
F043 (Tx)	RESPONSE	Air Support Response	The RESPONSE is used to accept, refuse, or veto an air support request. It may also endorse or state priorities for an air support request.	4, 5	Para 3.2.1 Tasking
F058 (Rx)	ATO	Air Tasking Order	The ATO is used to task air missions, assign cross-force tasking and may also be used for intraservice tasking.	2, 3, 4, 5	Para 3.2.1 Tasking
F087 (Tx/Rx)	MOVEREQ	Movement Request	The MOVREQ is used by a unit or higher level to request execution of a deployment of land-based unit(s).	Optional	Para 3.12 General Msg
F088 (Rx)	MWO	Movement Warning Order	The MWO is used by tasking agencies to warn of intended or expected deployments of land-based unit(s).	Optional	Para 3.12 General Msg
F089 (Rx)	MEO	Movement Execution Order	The MEO is used by tasking authorities to order the deployment of land-based unit(s).	Optional	Para 3.12 General Msg
F090 (Tx/Rx)	MCR	Movement Completion Report	The MCR is used by land-based units to report the completion of deployment.	Optional	Para 3.12 General Msg
J001 (Tx/Rx)	MSRCORRCANX	Message Correction or Cancellation	He MSGCORRCANX is used to cancel a message(s) and/or to correct the information in a previously transmitted message(s).	1, 2, 3, 4, 5	Para 3.12 General Msg
J002 (Tx/Rx)	ASSESSREP	Commander's Assessment Report	The ASSESSREP is used to advise superior commanders of the situation/operations in the reporting commander's area of concern, his assessment of the overall situation, and his intended or recommended actions based on that assessment.	Optional	Para 3.8.1 & 3.8.2 Resource Availability, Air Segment Stat & Gnd Segment Stat

<b>Index Ref No</b>	<b>MTF Identifier</b>	<b>MTF Name</b>	<b>Function or purpose</b>	<b>LOI</b>	<b>Comments</b>
J003 (Tx/Rx)	GENINFOMSG	General Information Message	The GENINFOMSG may only be used to provide information which cannot be provided using existing MTFs. This is a special message used for unusual circumstances that cannot be anticipated or planned and should not be used on a routine basis nor is it intended to replace existing messages.	Optional	Para 3.12 General Msg
J005 (Tx/Rx)	COMSPOT	Communications Spot Report	The COMSPOT is used to report actual or forecast communications outages including relocation and EMCON.	2, 3, 4, 5	Para 3.4.2 Collateral Data, Mission Dependent
J006 (Tx/Rx)	INCSPOTREP	Incident Spot Report	The INCSPOTREP is used to provide time critical information on important events that have an immediate impact on operations.	2, 3, 4, 5	Para 3.4.2 Collateral Data, Mission Dependent
J007 (Tx/Rx)	CBRN 1	CBRN 1 Report	The CBRN 1 is used to provide the observer's initial report giving basic data.	2, 3, 4, 5	Para 3.9.5 & 3.9.11 Payload Data, CBRN & Mission Reporting
J009 (Rx)	FIRST HOSTILE ACT	First Hostile Act Report	The FIRST HOSTILE ACT is used to rapidly provide major NATO commands with information on initial enemy/opposition forces (OPFOR) hostile acts in order to enable major NATO commands to react as early as possible.	1, 2, 3, 4, 5	Para 3.4.1 Collateral Data, Gen Battlefield Pic
J012 (Tx)	SARIR	Search and Rescue Incident Report	The SARIR is used to report any situation which may require a search and rescue effort.	Optional	Para 3.12 General Msg

<b>Index Ref No</b>	<b>MTF Identifier</b>	<b>MTF Name</b>	<b>Function or purpose</b>	<b>LOI</b>	<b>Comments</b>
J013 (Rx)	SARREQ	Search and Rescue Request	The SARREQ is used to request forces to participate in a search and rescue mission.	4, 5	Para 3.12 General Msg
J015 (Rx)	MARINTSUM	Maritime Intelligence Summary	The MARINTSUM is used to provide periodic summary information pertaining to the movement of non-NATO forces in NATO maritime areas.	1, 2, 3, 4, 5	Para 3.4.1 Collateral Data, Gen Battlefield Pic
J016 (Rx)	MARINTREP	Maritime Intelligence Report	The MARINTREP is used to provide time sensitive advisory information pertaining to the movement of non-NATO forces in NATO maritime areas.	4, 5	Para 3.4.1 Collateral Data, Gen Battlefield Pic
J017 (Rx)	IFFPROD	IFF Procedures	The IFFPROD is used to provide friendly forces with effective IFF modes and codes, and effective time periods.	4, 5	Para 3.2.1 Tasking
J018 (Tx/Rx)	MIJIWARNREP	MIJI Warning Report	The MIJIWARNREP is used in times of peace and crisis to warn NATO nations, commands and units of hazardous electronic warfare situations caused by MIJI incidents, which are of hostile, friendly (inadvertent) or unknown origin.	1, 2, 3, 4, 5	Para 3.4.2 Collateral Data, Mission Dependent
J019 (Rx)	AIRATTACKWARN	Air Attack Warning	The AIRATTACKWARN is used to warn of imminent enemy air attacks against friendly forces. It may be used in conjunction with either global early warning (GEW) or local early warning (LEW) messages generated by automated air defence (ad) systems.	1, 2, 3, 4, 5	Para 3.4.1 Collateral Data, Gen Battlefield Pic

<b>Index Ref No</b>	<b>MTF Identifier</b>	<b>MTF Name</b>	<b>Function or purpose</b>	<b>LOI</b>	<b>Comments</b>
J020 (Rx)	CBRN CDR	CBRN Chemical (Biological) Downwind Report	The CBRN CDR is used by appropriate agencies every six hours to disseminate a forecast of the meteorological data needed for the chemical hazard area prediction procedure for 3 consecutive 2 hour periods for either the nearest 6 hours or for a period more than 6 hours ahead.	1, 2, 3, 4, 5	Para 3.9.5 & 3.11 Payload Data, CBRN & Mission Reporting
J021 (Tx/Rx)	INTREQ	Intelligence Request	The INTREQ is used to standardise the method by which military authorities and forces of NATO nations and NATO commands request intelligence information.	2, 3, 4, 5	Para 3.12 General Msg
J022 (Tx/Rx)	CBRN 6	CBRN 6 Message	The CBRN 6 is used to pass detailed information on CBRN incidents.	2, 3, 4, 5	Para 3.4.3 & 3.9.5 Collateral Data, CBRN & Payload/Sensor Data, CBRN
J023 (Rx)	CBRN 2	CBRN 2 Report	CBRN 2 is used for passing the evaluated data from collected CBRN1 reports.	1, 2, 3, 4, 5	Para 3.9.5 Payload/Sensor Data, CBRN
J024 (Rx)	CBRN SITREP	CBRN SITREP Report	The CBRN SITREP is used for passing information on the CBRN situation.	2, 3, 4, 5	Para 3.4.3 Collateral Data, CBRN
J026 (Tx/Rx)	CBRN 3	CBRN 3 Report	The CBRN 3 is used for passing immediate warning of predicted contamination and hazard areas.	1, 2, 3, 4, 5	Para 3.4.3 & 3.9.5 Collateral Data, CBRN & Payload/Sensor Data, CBRN

<b>Index Ref No</b>	<b>MTF Identifier</b>	<b>MTF Name</b>	<b>Function or purpose</b>	<b>LOI</b>	<b>Comments</b>
J028 (Tx/Rx)	CBRN BWR	CBRN Basic Wind Report	The CBRN BWR is used to report wind direction and speed in 2,000m increments from the surface of the earth to 30,000m altitude for either the nearest 6 hours or for a period more than 6 hours ahead.	Optional	Para 3.4.3 & 3.9.5 Collateral Data, CBRN & Payload/Sensor Data, CBRN
J029 (Tx)	AIRSTAT	Offensive Weapon System and Air Defence Status Report	The AIRSTAT is used to keep Shape informed on availability of offensive air forces committed to Shape, maritime helicopter and patrol aircraft committed to Shape, and defensive weapon systems committed to the integrated air defence of ACE.	4, 5	Para 3.8.1 & 3.8.2 Resource Availability, Air Segment Stat & Gnd Segment Stat
J033 (Tx/Rx)	CBRN 4	CBRN 4 Report	The CBRN 4 is used for reporting detection data and survey results.	2, 3, 4, 5	Para 3.4.3 & 3.9.5 Collateral Data, CBRN & Payload/Sensor Data, CBRN
J034 (Tx/Rx)	CBRN 5	CBRN 5 Report	The CBRN 5 is used for passing information on areas of actual contamination.	2, 3, 4, 5	Para 3.4.3 & 3.9.5 Collateral Data, CBRN & Payload/Sensor Data, CBRN

<b>Index Ref No</b>	<b>MTF Identifier</b>	<b>MTF Name</b>	<b>Function or purpose</b>	<b>LOI</b>	<b>Comments</b>
J038 (Rx)	GEOSITREP	Geographic Situation Report	The GEOSITREP is used to keep major subordinate commands informed during periods of tension and war on the geographical situation within ace. The first report is required to inform headquarters of serious shortages and most urgent requirements within the geographic services when military vigilance is declared. It also gives an overall picture of the map/chart reproduction potential immediately available. Continuation reports are required to keep the information up-to-date for evaluation, planning, and coordination by the headquarters.	Optional	Para 3.4.1 Collateral Data, Gen Battlefield Pic
J050 (Rx)	ORBATTOA LAN-AIR	Order of Battle Transfer of Authority Message - Land and Air	The ORBATTOA LAND-AIR is used to report or direct the transfer of operational command (OPCOM) and/or control (OPCON) between nations and NATO or within the NATO chain of command. An ORBATTOA land-air message will normally confirm the delegation of authority requested in ACTWARN and ACTREQ messages.	Optional	Para 3.2.1 Tasking
J051 (Rx)	ROEIMPL	Rules of Engagement Implementation	The ROEIMPL is used to implement and/or cancel specific rules of engagement.	3, 4, 5	Para 3.2.1 Tasking
J052 (Tx/Rx)	ROEREQ	Rules of Engagement Request	The ROEREQ is used to request authorization to implement specific rules of engagement (roe(s)).	Optional	Para 3.12 General Msg
J060 (Rx)	ROEAUTH	Rules of Engagement Authorization	The ROEAUTH is used by the North Atlantic Council (NAC)/Defence Planning Committee (DPC) to authorize implementation or cancellation of specific rules of engagement (roe(s)).	3, 4, 5	Para 3.2.1 Tasking

<b>Index Ref No</b>	<b>MTF Identifier</b>	<b>MTF Name</b>	<b>Function or purpose</b>	<b>LOI</b>	<b>Comments</b>
J061 (Rx)	CBRN EDR	CBRN Effective Downwind Report	The CBRN EDR is used to provide the effective downwind data needed for prediction of fallout areas following nuclear burst for either the nearest 6 hours or for a period more than 6 hours ahead, including specific downwind speeds and directions for up to seven selected weapon yields.	2, 3, 4, 5	Para 3.4.3 & 3.9.5 Collateral Data, CBRN & Payload/Sensor Data, CBRN
J064 (Tx/Rx)	EWMSNSUM	Electronic Warfare Mission Summary	The EWMSNSUM is used to summarize significant electronic warfare missions and the status of offensive electronic warfare assets.	3, 4, 5	Para 3.11 Mission reporting
J065 (Rx)	EWSTOPJAM	Electronic Warfare Stop Jamming Message	The EWSTOPJAM is used to terminate immediately a jamming mission being conducted by an electronic countermeasures asset.	3	Para 3.2.1 Tasking
J066 (Rx)	EWRTM	Electronic Warfare Requesting/Tasking Message	The EWRTM is used to task component commanders to perform electronic warfare (EW) operations in support of the overall joint EW plan and to support component EW operations.	3, 4, 5	Para 3.2.1 Tasking
J070 (Rx)	WCO	Weapon Control Order	The WCO is used to order a new weapon control order for SHORAD.	4, 5	Para 3.2.1 Tasking
J071 (Tx/Rx)	TRACKREP	Target Track Report	The TRACKREP is used to report aircraft movement by track number.	2, 3, 4, 5	Para 3.4.1 Collateral Data, Gen Battlefield Pic
J072 (Rx)	COVREP	Weapon Coverage Report	The COVREP is used to inform other formations of SHORAD weapon coverage.	4, 5	Para 3.4.2 Collateral Data, Mission Dependent

<b>Index Ref No</b>	<b>MTF Identifier</b>	<b>MTF Name</b>	<b>Function or purpose</b>	<b>LOI</b>	<b>Comments</b>
J073 (Rx)	SENSCOVREP	Sensor Coverage Report	The SENSCOVREP is used to inform other formations of SHORAD sensor coverage.	4, 5	Para 3.4.2 Collateral Data, Mission Dependent
J076 (Rx)	ACTWARN	Activation Warning Message	The ACTWARN is used to inform nations, military headquarters, MNCS and other commands of a potential requirement to activate contingency plans, on call forces, special surveillance missions or other unique requirement to employ military forces.	1, 2, 3, 4, 5	Para 3.2.1 Tasking
J077 (Tx/Rx)	ACTREQ	Activation Request Message	The ACTREQ is used to request authority from the NATO military committee (NAMILCOM) to activate contingency plans, on call forces, special surveillance missions or other unique requirement to employ military forces.	Optional	Para 3.2.1 Tasking
J078 (Rx)	ACTORD	Activation Order Message	The ACTORD is used to activate contingency plans, on call forces, special surveillance missions or other unique requirement to employ military forces.	1, 2, 3, 4, 5	Para 3.2.1 Tasking
J079 (Tx/Rx)	LASERWARN	Laser Target Marking Warning Message	The LASERWARN is used to confirm the activation arrangements for laser target markers.	3, 4, 5	Para 3.2.1 Tasking
J082 (Tx/Rx)	LOGASSESSREP	Logistic Assessment Report	The LOGASSESSREP is used to standardise the method for informing superior headquarters of the command's logistics status and to provide an assessment of the overall logistics situation for forces, together with intended or recommended action.	Optional	Para 3.8.1 & 3.8.2 Resource Availability, Air Segment Status & Gnd Segment Status

<b>Index Ref No</b>	<b>MTF Identifier</b>	<b>MTF Name</b>	<b>Function or purpose</b>	<b>LOI</b>	<b>Comments</b>
J083 (Tx/Rx)	LOGUPDATE	Logistic Update Report	The LOGUPDATE is used to provide NATO commanders with a dynamic update of changes to core database information on stockpiles of specific equipment and consumable materiel held by national forces declared to NATO, as well as specified equipment and materiel held by nations in support of such forces.	Optional	Para 3.8.1 & 3.8.2 Resource Availability, Air Segment Status & Gnd Segment Status
J092 (Tx/Rx)	EVENTREP	Events Report	The EVENTREP is used to provide NATO HQ and Nations, through the MNC chain of command, information about important events, trends and activities that do not have an element of extreme urgency, but do influence peace support operations force (PSOFOR) (e.g. IFOR, SFOR) operations.	1, 2, 3, 4, 5	Para 3.12 General Msg
J095 (Tx/Rx)	SITREP	Situation Report	The SITREP is used to provide SACEUR with information of the committed forces capabilities with regard to current and release operations and the overall situation of the involved parties.	1, 2, 3, 4, 5	Para 3.8.1 & 3.8.2 Resource Availability, Air Segment Status & Gnd Segment Status
J099 (Tx/Rx)	CISSITREP	CIS Situation Report	The CISSITREP is used to provide a periodic report of own communications and information systems (CIS) status in support of operations and exercises.	1, 2, 3, 4, 5	Para 3.8.1 & 3.8.2 Resource Availability, Air Segment Status & Gnd Segment Status

<b>Index Ref No</b>	<b>MTF Identifier</b>	<b>MTF Name</b>	<b>Function or purpose</b>	<b>LOI</b>	<b>Comments</b>
J101 (Tx/Rx)	COMPASSESSREP	Compliance Assessment Report	The COMPASSESSREP is used to provide MNCS and NATO HQ information of the parties' compliance with accepted agreements concerning the designated 'safe' or other area(s)/exclusion zone(s)/separation zone(s). This report may include assessments.	1, 2, 3, 4, 5	Para 3.11 Mission Reporting
J103 (Tx/Rx)	RECCEXREP	Reconnaissance Exploitation Report	The Reconnaissance Exploitation Report (RECCEXREP) is used to report the results of an air reconnaissance mission by the interpretation of sensor data.	1, 2, 3, 4, 5	Para 3.11 Mission Reporting
J110 (Tx/Rx)	INTREP	Intelligence Report	The INTREP is used for the immediate dissemination of key intelligence that could have a significant impact on current and pending operations and planning.	1, 2, 3, 4, 5	Para 3.4.1 Collateral Data, Gen Battlefield Pic
J111 (Rx)	INTSUM	Intelligence Summary	The INTSUM is used to periodically inform addressees of military, associated political/economical or other related intelligence and the assessment of this. It gives an indication of change in potential OPFOR (opposing force) capabilities, preparedness or military posture, activities, intentions, objectives and/or courses of action in peace, operations other than war, and war.	1, 2, 3, 4, 5	Para 3.4.1 Collateral Data, Gen Battlefield Pic
J112 (Tx/Rx)	CIINTREP	Counter-Intelligence and Security Report	The CIINTREP is used for the immediate dissemination of counter-intelligence and security information that could have a significant impact on current or pending operations and planning.	Optional	Para 3.12 General Msg
J113 (Tx/Rx)	CIINTSUM	Counter-Intelligence and Security Summary	The CIINTSUM is used to inform addresses periodically on current counter-intelligence and security and to provide estimate of threat posed by hostile intelligence services (his) or subversive groups.	Optional	Para 3.12 General Msg

<b>Index Ref No</b>	<b>MTF Identifier</b>	<b>MTF Name</b>	<b>Function or purpose</b>	<b>LOI</b>	<b>Comments</b>
J114 (Rx)	SUPINTREP	Supplementary Intelligence Report	The SUPINTREP is used for providing all addressees with comprehensive reviews of non-time-sensitive intelligence collected over an extended period of time, or detailed intelligence studies on specific subjects	Optional	Para 3.12 General Msg
J115 (Rx)	CISUPINREP	Counter-Intelligence and Security Supplementary Report	The CISUPINTREP is used to provide all addressees with a comprehensive review of all counter-intelligence (CI) data collected over an extended period of time including an assessment of trends in the development of the CI situation. The CISUPINTREP is also used to provide a comprehensive review of one or several specific CI projects.	Optional	Para 3.12 General Msg
N003 (Tx/Rx)	JAMWARN	Jamming Warning	The JAMWARN is used to issue a warning about own jamming operations.	1, 2, 3, 4, 5	Para 3.4.2 Collateral Data, Mission Dependent
N010 (Rx)	OPTASK ASUW	Operational Tasking of Anti-Surface Warfare	The OPTASK ASUW is used to promulgate detailed tasking and instructions for the conduct of anti-surface warfare.	3, 4, 5	Para 3.2.1 Tasking
N017 (Rx)	OPTASK LINK	Operational Tasking Data Links	The OPTASK link is used to provide detailed instructions regarding the operations of tactical data links.	2, 3, 4, 5	Para 3.2.1 Tasking
N023 (Rx)	GREEN	Maritime Unit Execution Order	The GREEN is used to task maritime patrol or surveillance and ASW units.	1, 2, 3, 4, 5	Para 3.2.1 Tasking
N024 (Tx/Rx)	PURPLE	Maritime Mission Summary Report	The PURPLE is used to provide a comprehensive summary of the activities of a mission or event.	3, 4, 5	Para 3.11 Mission Reporting

<b>Index Ref No</b>	<b>MTF Identifier</b>	<b>MTF Name</b>	<b>Function or purpose</b>	<b>LOI</b>	<b>Comments</b>
N025 (Tx/Rx)	LOCATOR	Maritime Force Locator	The LOCATOR is used to report surface, subsurface, air, or special interest units operating in the maritime environment.	2, 3, 4, 5	Para 3.4.2 Collateral Data, Mission Dependent
N028 (Rx)	OPTASK AIR	Operational Tasking Organic Aircraft	The OPTASK air is used for the OTC or delegated authority to promulgate detailed tasking and instructions for all organic aircraft. This message is normally promulgated by the OTC or the air coordinator.	3, 4, 5	Para 3.2.1 Tasking
N033 (Rx)	SATVULREP	Satellite Vulnerability Report	The SATVULREP is used to promulgate periods of vulnerability to satellite reconnaissance and to prescribe countermeasures to satellite surveillance.	Optional	Para 3.12 General Msg
N067 (Rx)	OPTASK COMMS	Operational Tasking Communications	The OPTASK COMMS is used to promulgate the communications plan in force and provide communications related instructions.	2, 3, 4, 5	Para 3.2.1 Tasking
N068 (Rx)	OPTASK EW	Operational Tasking Electronic Warfare	The OPTASK EW is used to promulgate detailed tasking and instructions for the conduct of electronic warfare.	3, 4, 5	Para 3.2.1 Tasking

### **Attachment 5 - 3: UAS LOI ADatP-3 BUILD 11 REQUIREMENTS**

The following tables list the ADatP-3 messages that are required to support each UAS LOI (refer to the remarks in Section 1.6, Implementation of UA LOI in the CCI).

#### **Level of Interoperability 1**

<b>Index Ref No</b>	<b>MTF Identifier</b>	<b>MTF Name</b>
A072	SYS.RRM	System Reply Message
A080	FRAGO	Fragmentary Order
J001	MSRCORRCANX	Message Correction or Cancellation
J009	FIRST HOSTILE ACT	First Hostile Act Report
J015	MARINTSUM	Maritime Intelligence Summary
J018	MIJIWARNREP	MIJI Warning Report
J019	AIRATTACKWARN	Air Attack Warning
J020	CBRN CDR	CBRN Chemical/Biological Downwind Report
J167	CBRN 2 BIO	CBRN 2 Biological Report
J155	CBRN 2 CHEM	CBRN 2 Chemical Report
J181	CBRN 2 NUC	CBRN 2 Nuclear Report
J173	CBRN 2 RAD	CBRN 2 Radiological Report
J168	CBRN 3 BIO	CBRN 3 Biological Report
J156	CBRN 3 CHEM	CBRN 3 Chemical Report
J182	CBRN 3 NUC	CBRN 3 Nuclear Report
J174	CBRN 3 RAD	CBRN 3 Radiological Report
J028	CBRN BWR	CBRN Basic Wind Report
J061	CBRN EDR	CBRN Effective Downwind Report
J169	CBRN 4 BIO	CBRN 4 Biological Report
J157	CBRN 4 CHEM	CBRN 4 Chemical Report
J183	CBRN 4 NUC	CBRN 4 Nuclear Report
J175	CBRN 4 RAD	CBRN 4 Radiological Report
J076	ACTWARN	Activation Warning Message
J078	ACTORD	Activation Order Message
J092	EVENTREP	Events Report
J095	SITREP	Situation Report
J099	CISSITREP	CIS Situation Report
J101	COMPASSESSREP	Compliance Assessment Report

<b>Index Ref No</b>	<b>MTF Identifier</b>	<b>MTF Name</b>
J103	RECCEXREP	Reconnaissance Exploitation Report
J110	INTREP	Intelligence Report
J111	INTSUM	Intelligence Summary
N003	JAMWARN	Jamming Warning
N023	GREEN	Maritime Unit Execution Order

### **Level of Interoperability 2**

All lower LOI messages are required plus the following messages (refer to the remarks in Section 1.6, Implementation of UA LOI in the CCI):

<b>Index Ref No</b>	<b>MTF Identifier</b>	<b>MTF Name</b>
A026	ENSITREP	Enemy Land Forces Situation Report
A031	OWNSITREP	Own Land Forces Situation Report
A046	OBSREP	Obstacle Report
A058	ATI.ATR	Artillery Target Intelligence - Artillery Target Report
A059	ATI.TIR	Artillery Target Intelligence - Target Information Request
A060	MET.CM	Meteorological - Computer
A061	MET.RFM	Meteorological - Request for MET
A062	MET.TA	Meteorological -Target Acquisition
A070	SPRT.GEOM	Support - Battlefield Geometry
A071	SYS.RFR	System - Request for Report
A088	RBTRECCEREP	Road, Bridge or Tunnel Reconnaissance Report
A092	GAPRECCEREP	GAP Reconnaissance Report
A100	OBSRECCEREP	Obstacle Reconnaissance Report
F004	AIR TASK	Air Task
F015	AIRALLOC	Air Allocation Message
F058	ATO	Air Tasking Order
J005	COMSPOT	Communications Spot Report
J006	INCSPOTREP	Incident Spot Report
J021	INTREQ	Intelligence Request
J071	TRACKREP	Target Track Report
J166	CBRN 1 BIO	CBRN 1 Biological Report
J154	CBRN 1 CHEM	CBRN 1 Chemical Report
J180	CBRN 1 NUC	CBRN 1 Nuclear Report

<b>Index Ref No</b>	<b>MTF Identifier</b>	<b>MTF Name</b>
J172	CBRN 1 RAD	CBRN 1 Radiological Report
J171	CBRN 6 BIO	CBRN 6 Biological Report
J159	CBRN 6 CHEM	CBRN 6 Chemical Report
J185	CBRN 6 NUC	CBRN 6 Nuclear Report
J177	CBRN 6 RAD	CBRN 6 Radiological Report
J178	CBRN SITREP	CBRN Situation Report
J170	CBRN 5 BIO	CBRN 5 Biological Report
J158	CBRN 5 CHEM	CBRN 5 Chemical Report
J184	CBRN 5 NUC	CBRN 5 Nuclear Report
J176	CBRN 5 RAD	CBRN 5 Radiological Report
N017	OPTASK LINK	Operational Tasking Data Links
N025	LOCATOR	Maritime Force Locator
N067	OPTASK COMMS	Operational Tasking Communications

### Level of Interoperability 3

All lower LOI messages are required plus the following messages (refer to the remarks in Section 1.6, Implementation of UA LOI in the CCI):

<b>Index Ref No</b>	<b>MTF Identifier</b>	<b>MTF Name</b>
A033	FM.CFF	Fire Mission-Call for Fire
A034	FM.SUB	Fire Mission-Subsequent Adjustment
A035	FM.MTO	Fire Mission-Message to Observer
A036	FM.FMC	Fire Mission-Fire Mission Command
F031	MISREP	Mission Report
J051	ROEIMPL	Rules of Engagement Implementation
J060	ROEAUTH	Rules of Engagement Authorization
J064	EWMSNSUM	Electronic Warfare Mission Summary
J065	EWSTOPJAM	Electronic Warfare Stop Jamming Message
J066	EWRTM	Electronic Warfare Requesting/Tasking Message
J079	LASERWARN	Laser Target Marking Warning Message
N010	OPTASK ASUW	Operational Tasking of Anti-Surface Warfare
N024	PURPLE	Maritime Mission Summary Report
N028	OPTASK AIR	Operational Tasking Organic Aircraft
N068	OPTASK EW	Operational Tasking Electronic Warfare

**Level of Interoperability 4 and 5**

All messages from LOI 1 & 2 tables contained in this attachment are required plus the following messages (See remarks in Section 1.6):

<b>Index Ref No</b>	<b>MTF Identifier</b>	<b>MTF Name</b>
A032	ORBATLAND	Order of Battle – Land Forces
A069	SPRT.ACA	Support – Airspace Coordination Area
F001	AIRINTREP	Air Intelligent Report
F011	ACO	Airspace Control Order
F012	ACMREQ	Airspace Control Means Request
F031	MISREP	Mission Report
F032	ORBATAIR	Order of Battle – Air Forces
F043	RESPONSE	Air Support Response
J013	SARREQ	Search and Rescue Request
J016	MARINTREP	Maritime Intelligence Report
J017	IFFPROD	IFF Procedures
J029	AIRSTAT	Offensive Weapon System and Air Defense Status Report
J051	ROEIMPL	Rules of Engagement Implementation
J060	ROEAUTH	Rules of Engagement Authorization
J064	EWMSNSUM	Electronic Warfare Mission Summary
J066	EWRTM	Electronic Warfare Requesting/Tasking Message
J070	WCO	Weapon Control Order
J072	COVREP	Weapon Coverage Report
J073	SENSCOVREP	Sensor Coverage Report
J079	LASERWARN	Laser Target Marking Warning Message
N010	OPTASK ASUW	Operational Tasking of Anti-Surface Warfare
N024	PURPLE	Maritime Mission Summary Report
N028	OPTASK AIR	Operational Tasking Organic Aircraft
N068	OPTASK EW	Operational Tasking Electronic Warfare

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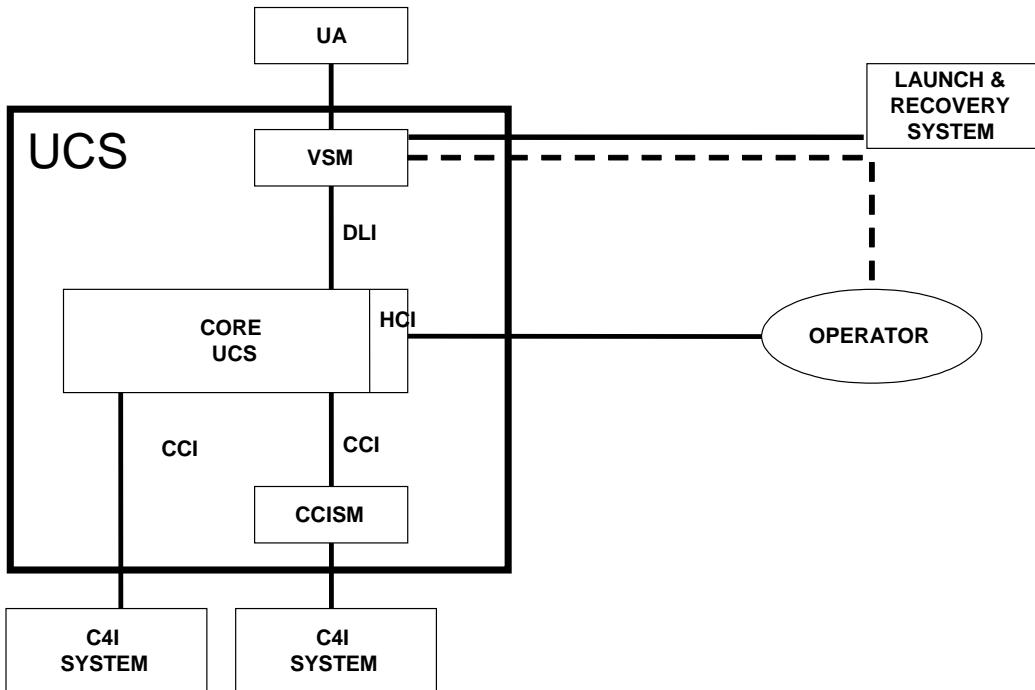
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## 1 INTRODUCTION

### 1.1 SCOPE

1. Allied Engineering Publication (AEP)-84 Volume I Chapter 6 specifies the Human Computer Interface (HCI) requirements that a CUCS should support for various levels of interoperability. As illustrated in Figure 3-1, the HCI is an integral element of the CUCS. Chapter 6 specified requirements will contribute to UA interoperability.
2. The HCI requirements should facilitate seamless integration of NATO UASs into joint combined NATO battlefield infrastructures across the five Levels of Interoperability (LOI).
3. Chapter 6 establishes the general requirements for information to be displayed by the UCS. The requirements detail the functions and interactions that the UCS should allow the operator to perform.
4. Chapter 6 specifies the requirements levied upon the UCS, and does not impose any requirements on Human Factors (HF) and ergonomics. The HCI complies with the NATO C3 Technical Architecture's NC3 Common Standards Profile (NCSP).



**Figure 3 - 1. UCS Functional Architecture**

5. Although portions of the HCl will have a physical implementation within a CUCS, Chapter 6 does not impose any design requirements. This means that there are no restrictions to size, form or components used in an HCl implementation. The reader is referred to the STANAG 4586 Implementation Document for recommended methods to corporate HCl functional requirements, but some examples follow. Example 1: A HCl may be a dual workstation in a shelter offering a high degree of functionality required by a High Altitude Long Endurance (HALE) UA, whereas a small portable unit (hand-held computer) used to operate a Micro Unmanned Aircraft (also known as a MAV) would also be considered a HCl implementation. Example 2: For a maritime UCS, there may be a HCl providing LOI 5 functionality, while lower levels of functionality (LOI 1 or 2) could be required on other parts of the ship, which may require a different HCl.

6. Within this chapter, the applicable LOI have been identified for all requirements (both mandatory 'shall' and recommended 'should' statements). This has the effect of clearly identifying what requirements the CUCS should be compliant with in order to enable the required LOI.

## 2 FUNCTIONAL REQUIREMENTS

1. This section provides a set of mandatory requirements and recommendations for the HCI to allow user interoperability between NATO Nations' UA assets. These are categorised under the following headings:

- 2.1 General Requirements
- 2.2 UCS Configuration
- 2.3 Mission Planning
- 2.4 Unmanned Aircraft Control
- 2.5 Operator Control and Monitoring
- 2.6 Payload Control and Monitoring
- 2.7 Warnings, Cautions, and Advisories
- 2.8 Communications Management

Following the functional requirements statements, the applicable LOIs are presented.

2. In the following sections a 'qualified operator' is a system operator who has been determined by the operational system user (e.g., US Air Force), to be qualified to perform the specified function. Since this is an operational requirement it will not/cannot be tested/verified by the acquisition/development organization and does not have to be validated as part of the component and system test.

### 2.1 GENERAL REQUIREMENTS

The operator shall have the ability to enter and synchronise a time with the UAS and applicable C4I systems [HCI 0001]. This applies to LOIs 1, 2, 3, 4, and 5.

### 2.2 UCS CONFIGURATION

1. The HCI shall provide the operator with the ability to generate, receive, display, edit, and send message types that have been defined in the STANAG 4586 as applicable to required LOI [HCI 0002]. This applies to LOIs 1, 2, 3, 4, and 5.

2. The operator shall be able to globally change the measurement units (e.g., change from imperial units to metric, or Latitude/Longitude to Universal Transverse Mercator (UTM) or Military Grid Reference System (MGRS)) [HCI 0003]. This applies to LOIs 1, 2, 3, 4, and 5.

### 2.3 MISSION PLANNING

1. Mission Planning includes all planning aspects of all phases of the mission contained in the MO/ATO (e.g., pre-flight and in-flight for UA, payload, data link and communications). For CUCSs, which have the capability to generate mission plan(s), the HCI shall enable a qualified operator to create, edit, and save a mission plan(s) [HCI 0004]. For mission plans developed external to the CUCS, the HCI shall enable a qualified operator to import, view, and save a mission plan [HCI 0005]. This applies to LOIs 3, 4, and 5.

2. The HCI shall enable a qualified operator to update (without uploading) a current mission plan at any time before or during flight [HCI 0006]. This applies to LOIs 3, 4, and 5. The HCI shall provide a qualified operator with the ability to download mission plans from the UA [HCI 0021]. This applies to LOIs 4 and 5.

3. The HCI shall provide a qualified operator with the ability to upload mission plans to the UA [HCI 0007]. This applies to LOIs 4 and 5.

### 2.4 UNMANNED AIRCRAFT CONTROL

1. The HCI shall provide controls and displays for controlling/monitoring the UA in all supported flight modes [HCI 0008]. This applies to LOIs 4 & 5.

2. The operator shall have the ability to pass UA control (handover) to another UCS with a qualified operator(s) and monitor the status of the handover as per the mechanisms defined in Chapter 4 (DLI) [HCI 0009]. This applies to LOIs 4 and 5.

## **2.5 OPERATOR CONTROL AND MONITORING**

The HCI shall provide an image display to allow the operator to view image files from external C4I sources [HCI 0010]. This applies to LOI 1, 2 and 3.

## **2.6 PAYLOAD CONTROL AND MONITORING**

1. The Payload Control HCI functions defined within the CUCS will be generic to types of payload, rather than specific payloads, where possible. The payload types are:

- Imaging Sensors (Passive) (including visible and infrared wavebands, hyperspectral, and multispectral sensors)
- Imaging Sensors (Radar/Active Sensors) (including Airborne Radar, Synthetic Aperture Radar (SAR) and Moving Target Indicator (MTI))
- Laser Based Payloads (e.g., Laser Range Finders, Laser Target Designators)
- Communications Relay (CR)
- Stores (Dispensing) payloads (to include weapons, humanitarian aid, unattended ground sensors, buoys)

2. The HCI shall provide sufficient controls and displays to control payloads and all associated functions for only those payloads that have been validated with the current CUCS [HCI 0011]. This applies to LOI 3.

3. The HCI shall provide sufficient controls and displays to monitor payloads and all associated functions for only those payloads that have been validated with the current CUCS [HCI 0012]. This applies to LOI 2 and 3.

4. A qualified operator shall have the ability to pass and receive control (handover) of the AV's payload to/from another control system and monitor the payload control via the mechanisms defined in Chapter 4 (DLI) [HCI 0013]. This applies to LOI 3.

5. For payloads that generate motion imagery, the operator shall have a motion imagery display [HCI 0014]. This applies to LOIs 2 and 3.

6. Stores (dispensing) payloads are considered to be those that are released from the UA as part of the UA mission objectives. This can include the release of weapons or deployment of remote sensors, etc. The release mechanism for the payload shall be clearly identified and labelled to the operator [HCI 0015]. This applies to LOI 3.

7. A safety interlock shall operate such that the operator cannot inadvertently release the payload [HCI 0016]. This applies to LOI 3.

For multiple-shot dispensing payloads, the number of uses remaining shall be indicated to the operator [HCI 0017]. This applies to LOIs 2 and 3.

## **2.7 WARNINGS, CAUTIONS, AND ADVISORIES**

Warnings, cautions, and advisories inform the operator about any unusual or critical condition. The HCI shall provide the capability to display and manage warnings, cautions, and advisories as defined in Chapter 3 [HCI 0018]. This applies to LOIs 2, 3, 4, and 5.

## **2.8 COMMUNICATIONS MANAGEMENT**

1. Communications Management controls the communications links between the UCS and the UA. This would include any additional antennas or data links required to support a specific payload (e.g., a CR payload). It provides the operator at the CUCS with the ability to configure the data links and to change a number of parameters of the Vehicle Data Terminal

(VDT) and the CDT. Whilst the majority of data link parameters will be controlled from the CUCS, some more specific data link functions will need to be controlled through the DLI. Reference should be made to Chapter 4: Data Link Interface.

2. The HCI shall provide the operator with the ability to open and control the communications links between the CUCS and other outside agencies such as [HCI 0019]:

- C4I systems via the CCI interface
- Air traffic control via both voice and data links
- VDT/CDT

This applies to LOIs 1, 2, 3, 4, and 5.

3. The CUCS shall provide an antenna/data link status display [HCI 0020]. This display does not necessarily have to be separate from the UA Control/Monitor display. This applies to LOIs 2, 3, 4, and 5.

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