



# EUROCONTROL Specification for Surveillance Data Exchange Safety Net Messages

ASTERIX Part 17 Category 004

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## **DOCUMENT APPROVAL**

This document has been approved by the ASTERIX Maintenance Group (AMG).

For management approval of the complete set of ASTERIX documentation refer to Part 1.

## DOCUMENT CHANGE RECORD

The following table records the complete history of the successive editions of the present document.

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## TABLE OF CONTENTS

<b>DOCUMENT CHARACTERISTICS</b> .....	<b>iii</b>
<b>DOCUMENT APPROVAL</b> .....	<b>iv</b>
<b>DOCUMENT CHANGE RECORD</b> .....	<b>v</b>
<b>1. INTRODUCTION</b> .....	<b>1</b>
<b>1.1 Scope</b> .....	<b>1</b>
<b>2. REFERENCES</b> .....	<b>3</b>
<b>2.1 General</b> .....	<b>3</b>
<b>2.2 Reference Documents</b> .....	<b>3</b>
<b>3. Definitions, acronyms and abbreviations</b> .....	<b>5</b>
<b>3.1 Definitions</b> .....	<b>5</b>
<b>3.2 Acronyms and Abbreviations</b> .....	<b>6</b>
<b>4. GENERAL PRINCIPLES</b> .....	<b>9</b>
<b>4.1 General</b> .....	<b>9</b>
<b>4.2 Time Management</b> .....	<b>9</b>
<b>4.3 Unused Bits in Data Items</b> .....	<b>9</b>
<b>4.4 Definitions and Addressing Concepts</b> .....	<b>10</b>
4.4.1 Addressing Concepts: Assigning SAC/SIC Codes .....	10
<b>4.5 Safety Net Messages</b> .....	<b>10</b>
4.5.1 Types of Safety Net Messages .....	10
4.5.2 User Application Profile and Data Block.....	17
<b>4.6 Composition of Messages</b> .....	<b>17</b>
<b>5. SAFETY NETS CONCEPTS and FURTHER READING</b> .....	<b>18</b>
<b>6. LAYOUT OF SAFETY NET MESSAGES</b> .....	<b>19</b>
<b>6.1 Standard Data Items</b> .....	<b>19</b>
<b>6.2 Description of Standard Data Items</b> .....	<b>20</b>
6.2.1 Data Item I004/000, Message Type .....	20
6.2.2 Data Item I004/010 Data Source Identifier .....	28
6.2.3 Data Item I004/015 SDPS Identifier .....	29
6.2.4 Data Item I004/020 Time of Message .....	29
6.2.5 Data Item I004/030 Track Number 1 .....	30
6.2.6 Data Item I004/035 Track Number 2 .....	31
6.2.7 Data Item I004/040 Alert Identifier.....	32

6.2.8	Data Item I004/045 Alert Status .....	32
6.2.9	Data Item I004/060 Safety Net Function & System Status .....	33
6.2.10	Data Item I004/070, Conflict Timing and Separation .....	38
6.2.11	Data Item I004/074, Longitudinal Deviation.....	42
6.2.12	Data Item I004/075, Transversal Distance Deviation.....	42
6.2.13	Data Item I004/076, Vertical Deviation .....	43
6.2.14	Data Item I004/100, Area Definition .....	44
6.2.15	Data Item I004/110, FDPS Sector Control Identification.....	51
6.2.16	Data Item I004/120, Conflict Characteristics .....	52
6.2.17	Data Item I004/170, Aircraft Identification & Characteristics 1 .....	63
6.2.18	Data Item I004/171, Aircraft Identification & Characteristics 2.....	76
<b>6.3</b>	<b>User Application Profile for Category 004 .....</b>	<b>88</b>

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## **1. INTRODUCTION**

### **1.1 Scope**

This document describes the message structure for the transmission of messages from a Safety Net function.

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## **2. REFERENCES**

### **2.1 General**

The following Documents and Standards contain provisions, which, through references in this text, constitute provisions of this EUROCONTROL Standard Document.

At the time of publication of this EUROCONTROL Standard Document, the editions indicated for the referenced documents and standards were valid.

Any revision of the referenced ICAO Documents shall be immediately taken into account to revise this EUROCONTROL Standard Document.

Revisions of the other referenced documents shall not form part of the provisions of this EUROCONTROL Standard Document until they are formally reviewed and incorporated into this EUROCONTROL Standard Document.

In case of a conflict between the requirements of this EUROCONTROL Standard Document and the contents of the other referenced documents, this EUROCONTROL Standard Document shall take precedence.

### **2.2 Reference Documents**

1. EUROCONTROL Specification SPEC-0149, edition 2.4, 24 October 2016 "EUROCONTROL Specification for Surveillance Data Exchange – Part 1 All Purpose Structured EUROCONTROL Surveillance Information Exchange – ASTERIX".
2. Operational Requirements Document for EATCHIP Phase III. ATM Added Functions. Volume 2: Safety Nets. Edition 2.0. EUROCONTROL, 25/01/1999. Document Number : OPR.ET1.ST04.DEL01.2.
3. ICAO Annex 10, Vol. IV Fourth Edition
4. ICAO Annex 5
5. EUROCONTROL Specification SPEC-0142, edition 1.0 15/07/2010 "EUROCONTROL Specification for Monitoring Aids"

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### 3. DEFINITIONS, ACRONYMS AND ABBREVIATIONS

#### 3.1 Definitions

For the purposes of this EUROCONTROL Document, the following definitions shall apply:

- |        |                                  |  |
|--------|----------------------------------|--|
| 3.1.1  | <b>Catalogue of Data Items:</b>  | List of all the possible Data Items of each Data Category describing the Data Items by their reference, structure, size and units (where applicable).                                    |
| 3.1.2  | <b>Data Block:</b>               | Unit of information seen by the application as a discrete entity by its contents. A Data Block contains one or more Record(s) containing data of the same Category.                      |
| 3.1.3  | <b>Data Category:</b>            | Classification of the data in order to permit inter alia an easy identification.   |
| 3.1.4  | <b>Data Field:</b>               | Physical implementation for the purpose of communication of a Data Item, it is associated with a unique Field Reference Number and is the smallest unit of transmitted information.      |
| 3.1.5  | <b>Data Item:</b>                | The smallest unit of information in each Data Category.  |
| 3.1.6  | <b>Record:</b>                   | A collection of transmitted Data Fields of the same Category preceded by a Field Specification field, signalling the presence/absence of the various Data Fields                         |
| 3.1.7  | <b>User Application Profile:</b> | The mechanism for assigning Data Items to Data Fields, and containing all necessary information which needs to be standardised for the successful encoding and decoding of the messages. |
| 3.1.8  | <b>Transversal</b>               | The word " <u>transversal</u> " is used in this document as the contrary of " <u>longitudinal</u> "  |
| 3.1.9  | <b>Lateral</b>                   | The word " <u>lateral</u> " is used in this document as the contrary of " <u>vertical</u> "  |
| 3.1.10 | <b>Time to Conflict</b>          | Remaining time until the prescribed separation minima (e.g. 3 NM or 5NM) will be actually violated   |
| 3.1.11 | <b>Time to Closest Approach</b>  | Remaining time until the targets in a conflict will have reached the point of their closest proximity.   |

## 3.2 Acronyms and Abbreviations

For the purposes of this EUROCONTROL Document the following shall apply:

<b>ACAS</b>	Airborne Collision Avoidance System
<b>ACASRA</b>	ACAS Resolution Advisory
<b>AFDA</b>	Approach Funnel Deviation Alert
<b>AIW</b>	Airspace Infringement Warning
<b>ALM</b>	Arrival / Landing Monitor
<b>AM</b>	Alive Message
<b>AMG</b>	ASTERIX Maintenance Group
<b>APM</b>	Approach Path Monitor
<b>APW</b>	Area Proximity Warning
<b>ARR</b>	ARRival
<b>ASCII</b>	American national Standard Code for Information Interchange
<b>ASM</b>	Aircraft Separation Monitor
<b>ASTERIX</b>	All Purpose STructured EUROCONTROL suRveillance Information Exchange
<b>ATCO</b>	Air Traffic Control Officer
<b>ATM</b>	Air Traffic Management
<b>CAT</b>	Data Category
<b>CFL</b>	Cleared Flight Level
<b>CHAM</b>	Cleared Heading Adherence Monitor
<b>CLAM</b>	Clearance Level Adherence Monitor
<b>CRA</b>	Closed Runway Alert
<b>CRM</b>	Cleared Rate Monitor
<b>CUW</b>	Catch-Up Warning
<b>CWP</b>	Controller Working Position
<b>DBPSM</b>	Downlinked Barometric Pressure Setting Monitor
<b>DEP</b>	DEParture
<b>DSAM</b>	Downlinked Selected Altitude Monitor
<b>EATM</b>	European Air Traffic Control Management
<b>EOC</b>	End of Conflict
<b>FIS-B</b>	Flight Information Service – Broadcast
<b>FDPS</b>	Flight Data Processing System
<b>FRN</b>	Field Reference Number
<b>FSPEC</b>	Field Specification
<b>FTD</b>	Final Target Distance
<b>FX</b>	Field Extension Indicator
<b>GAP</b>	Separation based on a gap manually entered by an ATCO
<b>HAM</b>	Holding Adherence Monitor
<b>HVI</b>	Holding Volume Infringement
<b>IAVM</b>	ILS Area Violation Monitor
<b>ICAO</b>	International Civil Aviation Organisation
<b>IIA</b>	Wake Vortex Indicator Infringement Alert
<b>ITD</b>	Initial Target Distance

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<b>LEN</b>	Length Indicator
<b>LSB</b>	Least Significant Bit
<b>LTW</b>	Lost Track Warning
<b>MLT</b>	Multilateration
<b>MRS</b>	Separation based on Minimum Radar Separation values
<b>MSAW</b>	Minimum Safe Altitude Warning
<b>MSSR</b>	Monopulse Secondary Surveillance Radar
<b>MTD</b>	Moving Target Detection
<b>NM</b>	Nautical Mile, unit of distance (1852 metres)
<b>NTCA</b>	Near Term Conflict Alert
<b>NTZ</b>	Non-Transgression Zone
<b>OCAT</b>	Outside Controlled Airspace Tool
<b>OTA</b>	Opposite Traffic Alert
<b>pAIW</b>	Primary Airspace Infringement Warning
<b>PSR</b>	Primary Surveillance Radar
<b>RA</b>	Resolution Advisory
<b>RAMHD</b>	Route Adherence Monitor Heading Deviation
<b>RAML D</b>	Route Adherence Monitor Longitudinal Deviation
<b>RCM</b>	Runway / Taxiway Crossing Monitor
<b>RDEFG</b>	Radar Data Exchange Focus Group
<b>RDM</b>	RIMCAS Departure Monitor
<b>RDP</b>	Radar Data Processing (System)
<b>RDPC</b>	Radar Data Processing Chain
<b>RE</b>	Reserved Expansion Indicator
<b>REP</b>	Field Repetition Indicator
<b>RIMCA(S)</b>	Runway Incursion Monitor and Conflict Alert (System)
<b>ROT</b>	Separation based on Runway Occupancy Time
<b>RVSM</b>	Reduced Vertical Separation Minima
<b>s</b>	second, unit of time
<b>SAC</b>	System Area Code
<b>SAM</b>	Speed Adherence Monitor
<b>SBOA</b>	Stop-Bar Overrun Alert
<b>SDP(S)</b>	Surveillance Data Processing (system)
<b>SESAR</b>	Single European Sky ATM Research
<b>SIC</b>	System Identification Code
<b>SID</b>	Standard Instrument Departure
<b>SP</b>	Special Purpose Indicator
<b>SSR</b>	Secondary Surveillance Radar
<b>STAR</b>	Standard Instrument Arrival
<b>STCA</b>	Short Term Conflict Alert
<b>SW</b>	Sequence Warning
<b>TL</b>	Transition Level
<b>TSM</b>	Taxiway Separation Monitor
<b>TTA</b>	Taxiway Traffic Alert
<b>UAP</b>	User Application Profile (see Definitions)

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<b>UTC</b>	Coordinated Universal Time
<b>UTMM</b>	Unauthorised Taxiway Movement Monitor
<b>VCD</b>	Vertical Conflict Detection
<b>VOM</b>	Vertical Overshoot Monitor
<b>VPM</b>	Vertical Path Monitor
<b>VRAM</b>	Vertical Rate Adherence Monitor
<b>VRM</b>	Vertical Rate Monitor
<b>VTM</b>	Vertical Tracker Monitor
<b>WGS</b>	World Geodetic System
<b>WRA</b>	Wrong Runway Alert

## **4. GENERAL PRINCIPLES**

### **4.1 General**

### **4.2 Time Management**

The time stamping shall comply with the Coordinated Universal Time (UTC) as specified in ICAO Annex 5.

### **4.3 Unused Bits in Data Items**

Decoders of ASTERIX data **shall never assume and rely on** specific settings of spare or unused bits. However in order to improve the readability of binary dumps of ASTERIX records, it is recommended to set all spare bits to zero.

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## 4.4 Definitions and Addressing Concepts

### 4.4.1 Addressing Concepts: Assigning SAC/SIC Codes

By convention a dedicated and unambiguous SAC/SIC code shall be assigned to every Safety Net Server.

## 4.5 Safety Net Messages

### 4.5.1 Types of Safety Net Messages

48 types of safety net messages have been identified:

- Alive Message
- Route Adherence Monitor Longitudinal Deviation (RAMLD)
- Route Adherence Monitor Heading Deviation (RAMHD)
- Minimum Safe Altitude Warning (MSAW)
- Area Proximity Warning (APW)
- Clearance Level Adherence Monitor (CLAM)
- Short Term Conflict Alert (STCA)
- Approach Path Monitor (APM)
- RIMCAS – Arrival / Landing Monitor (ALM)
- RIMCAS – Arrival / Departure Wrong Runway Alert (WRA)
- RIMCAS – Arrival / Departure Opposite Traffic Alert (OTA)
- RIMCAS – Departure Monitor (RDM)
- RIMCAS – Runway / Taxiway Crossing Monitor (RCM)
- RIMCAS – Taxiway Separation Monitor (TSM)
- RIMCAS – Unauthorized Taxiway Movement Monitor (UTMM)
- RIMCAS – Stop Bar Overrun Alert (SBOA)
- End of Conflict (EOC)
- ACAS Resolution Advisory (ACASRA)
- Near Term Conflict Alert (NTCA)
- Downlinked Barometric Pressure Setting Monitor (DBPSM)
- Speed Adherence Monitor (SAM)
- Outside Controlled Airspace Tool (OCAT)
- Vertical Conflict Detection (VCD)
- Vertical Rate Adherence Monitor (VRAM)
- Cleared Heading Adherence Monitor (CHAM)
- Downlinked Selected Altitude Monitor (DSAM)
- Holding Adherence Monitor (HAM)
- Vertical Path Monitor (VPM)
- RIMCAS – Taxiway Traffic Alert (TTA)
- RIMCAS – Arrival/Departure Close Runway Alert (CRA)
- RIMCAS – Arrival/Departure Aircraft Separation Monitor (ASM)
- RIMCAS – ILS Area Violation Monitor (IAVM)
- Final Target Distance Indicator (FTD)

- Initial Target Distance Indicator (ITD)
- Wake Vortex Indicator Infringement Alert (IIA)
- Sequence Warning on Final Approach (SQW)
- Catch-Up Warning (CUW)
- Lost Track Warning (LTW)
- Holding Volume Infringement (HVI)
- Airspace Infringement Warning (AIW)
- Conflicting ATC Clearances (CATC)
- No ATC Clearance (NOCLR)
- Aircraft not moving despite ATC Clearance (NOMOV)
- Aircraft Leaving/Entering Aerodrome Area without Handover (NOH)
- Wrong Runway or Taxiway Type (WRTY)
- Stand Occupied (STOCC)
- Ongoing Alert (ONGOING)
- Non-Transgression Zone (NTZ)

**Note:** RIMCAS denotes a Runway Incursion Monitoring and Conflict Alert System installed at airports.

#### ***4.5.1.1 Alive Message***

This message type is sent periodically by the Safety Net Server. It will report the status of the Safety Net server and its functions.

#### ***4.5.1.2 Route Adherence Monitor Longitudinal Deviation***

The Route Adherence Monitor Longitudinal Deviation is the Safety Net function responsible to alert in situations when an aircraft is ahead or behind its planned position. This RAMLD is performed by calculating the longitudinal distance the flight has from its planned position at the present time. When the longitudinal distance is greater than a threshold, an alert is generated.

#### ***4.5.1.3 Route Adherence Monitor Heading Deviation***

The Route Adherence Monitor Heading Deviation is the Safety Net function responsible to alert in situations when an aircraft is deviating from its planned heading. This RAMHD is performed by calculating the transversal distance the flight has from its planned position at the present time. When the lateral deviation distance is greater than a threshold, an alert is generated.

#### ***4.5.1.4 Minimum Safe Altitude Warning***

The Minimum Safe Altitude Warning (MSAW) is the Safety Net function responsible to alert in situations when an aircraft is, or is predicted to be, flying at an altitude below a defined threshold, and consequently there is the possibility of collision with an obstacle (Terrain, Building, etc...).

A specific case of MSAW is the infringement of the Minimum Radar Vectoring Altitude (MRVA). This will be signalled by setting bit 6 in the first extension of the first subfield of item 1004/120.

#### ***4.5.1.5 Area Proximity Warning***

The Area proximity Warning is the Safety Net function responsible to alert in situations when an aircraft is, or is predicted to be, crossing the border of a reserved area.

#### ***4.5.1.6 Clearance Level Adherence Monitor***

The Clearance Level Adherence Monitor is the Safety Net function responsible to alert in situations when an aircraft is deviating from its Cleared Flight level by a value greater than a threshold.

#### ***4.5.1.7 Short Term Conflict Alert***

The Short Term Conflict Alert is the Safety Net function responsible to detect, predict and report cases of conflicts (separation violations) for one or more pair of tracks. A conflict is a violation of the prescribed separation minima, both vertically and horizontally.

#### ***4.5.1.8 Approach Path Monitor***

The Approach Path Monitor (sometimes also known as Approach Funnel Deviation Alert System (AFDAS)) is the Safety Net function responsible for alerting in situations when an aircraft deviates from the nominal approach path, either laterally or vertically. APM is a more generic term than AFDA or AFDAS, and is therefore adopted by this specification.

#### ***4.5.1.9 RIMCAS Arrival / Landing Monitor (ALM)***

The Arrival / Landing monitor is designed to raise an alarm if during arrival or after landing of an aircraft a potential conflict with another target is detected.

#### ***4.5.1.10 RIMCAS Arrival / Departure Wrong Runway Alert (WRA)***

This function raises an alert if it is detected that an aircraft that is in the approach phase or is accelerating for departure moves in a direction other than for the runway it has been cleared for.

#### ***4.5.1.11 RIMCAS Arrival / Departure Opposite Traffic Alert (OTA)***

This alert is generated when it has been detected that during approach two aircraft are approaching the same runway from opposite directions. In case of departures this alert is raised if it is detected that two departures use the same runway in opposite directions.

#### ***4.5.1.12 RIMCAS Departure Monitor (RDM)***

This function supervises the departure area and raises an alarm if another target is detected inside this area.

**4.5.1.13 RIMCAS Runway / Taxiway Crossing Monitor (RCM)**

This function monitors the crossing between two runways or between a runway and a taxiway. If the system detects two targets approach the respective crossing area with a potential collision between the two targets, an alert is generated.

**4.5.1.14 RIMCAS Taxiway Separation Monitor (TSM)**

The controllers are alerted by this function if the prescribed separation minima between two targets on a taxiway are endangered.

**4.5.1.15 RIMCAS Unauthorized Taxiway Movement Monitor (UTMM)**

The taxiways are monitored for aircraft heading towards each other on the same taxiway, for targets entering the taxiway against the prescribed direction, for targets entering the wrong taxiway and for targets violating the prescribed speed-limit on the taxiway.

**NOTE:** As of Edition 1.12 of this specification it is possible to indicate in Data Item I004/120 Subfield #2 the exact cause for the alert.

**4.5.1.16 RIMCAS Stop-Bar Overrun Alert (SBOA)**

A stop-bar is a point on the airport surface where targets are required to stop. An alert is raised if it is detected that a target is passing an active stop-bar.

**4.5.1.17 End Of Conflict (EOC)**

This message is transmitted if the conflicting situation no longer exists.  
This message is used to terminate all types of alerts.

**4.5.1.18 ACAS Resolution Advisory (ACASRA)**

The ACAS Resolution Advisory is the function to report RA events between two or more aircraft. It utilizes the ACAS messages defined in ICAO Annex 10.

**4.5.1.19 Near Term Conflict Alert (NTCA)**

The NTCA is a conflict detection tool with a tactical scope. Following the STCA concept, it provides a common set of conflicts to all CWP, i.e. no CWP requests are sent to the NTCA. NTCA is based on the use of uncertainty cones, in the vertical and horizontal plane, to determine potentially conflicting pairs of aircraft.

**4.5.1.20 Downlinked Barometric Pressure Setting Monitor (DBPSM)**

The Downlinked Barometric Pressure Setting Monitor (DBPSM) alerts in situations where aircraft barometric pressure setting deviates from the expected pressure setting by a value greater than a threshold.

There are three separate DBPSM safety nets usually referred to as DBPSM ARR (DBPSM on ARRivals), DBPSM DEP (DBPSM on DEPartures) and DBPSM above TL (DBPSM above the Transition Level) which alert suspected altimetry errors by the pilot.

#### ***4.5.1.21 Speed Adherence Monitor (SAM)***

The Speed Adherence Monitor (SAM) alerts in situations where an aircraft is deviating from its expected airspeed by a value greater than a threshold.

The expected airspeed can be the cleared speed entered by the ATCO or a speed limit as defined per phases inside a volume.

#### ***4.5.1.22 Outside Controlled Airspace Tool (OCAT)***

The Outside Controlled Airspace Tool (OCAT) alerts in situations where an aircraft exits the controlled airspace.

#### ***4.5.1.23 Vertical Conflict Detection (VCD)***

The Vertical Conflict Detection (VCD) alerts in situations where crossing or merging traffic in predefined airspace structures, such as point merge arcs, share contentious vertical profiles.

#### ***4.5.1.24 Vertical Rate Adherence Monitor (VRAM)***

The Vertical Rate Adherence Monitor (VRAM) alerts in situations where an aircraft is deviating from its expected vertical rate by a value greater than a threshold.

There are three separate VRAM safety nets usually referred to as:

- CRM (Cleared Rate Monitor), which alerts when deviating from its expected cleared rate.
- VTM (Vertical Tracker Monitor), which alerts when an aircraft has an exceptionally high vertical rate, close to or outside the limits of the surveillance service.
- VRM (Vertical Rate Monitor), which alerts when an aircraft is descending or climbing at a vertical rate that suggests it will level off before reaching its expected level.

#### ***4.5.1.25 Clearance Heading Adherence Monitor (CHAM)***

The Clearance Heading Adherence Monitor is the Safety Net function responsible to alert in situations when an aircraft is deviating from its cleared heading by a value greater than a threshold.

#### ***4.5.1.26 Downlinked Selected Altitude Monitor (DSAM)***

The Downlinked Selected Altitude Monitor is the Safety Net function responsible to alert in situations when an aircraft final state selected altitude is deviating from its expected level by a value greater than a threshold that suggests it will level off before or after reaching its expected level.

#### ***4.5.1.27 Holding Adherence Monitor (HAM)***

The Holding Adherence Monitor is the Safety Net function responsible to alert in situations when an aircraft is deviating from its cleared holding area (possibly in terms of level, lateral position and rate of climb/descent).

There are three separate HAM safety nets usually referred to as:

- HAM HD (Heading deviation), which alerts when an aircraft is located laterally outside its cleared Holding volume.
- HAM VD (Vertical deviation), which alerts when an aircraft is located vertically outside its cleared Holding volume.

- HAM RD (Rate Deviation), which alerts when an aircraft is descending or climbing at a vertical rate that suggests it will level off before or after reaching its anticipated level.

#### ***4.5.1.28 Vertical Path Monitor (VPM)***

The Vertical Path Monitor is the Safety Net function responsible to alert in situations when an aircraft is deviating vertically from its SID/STAR vertical constraints.

#### ***4.5.1.29 RIMCAS – Taxiway Traffic Alert (TTA)***

The taxiways are monitored for targets entering the taxiway against the prescribed direction or entering a closed taxiway. Within this it should be possible to monitor taxiways and specific edges on crossways.

#### ***4.5.1.30 RIMCAS – Arrival/Departure Closed Runway Alert (CRA)***

This alert is generated when it has been detected that during approach an aircraft is directed to a closed runway.

#### ***4.5.1.31 Arrival/Departure Aircraft Separation Monitor (ASM)***

The Arrival/Departure Aircraft Separation Monitor is the Safety Net responsible to alert when safety margins have been eroded between two aircraft approaching and/or departing a runway. In regards to a safety net for ground surveillance time based separation thresholds are not sufficient for alarm detection. Within the Arrival/Departure Aircraft Separation Monitor it is possible to include additional procedural information for a more detailed alarm definition.

#### ***4.5.1.32 ILS Area Violation Monitor (IAVM)***

The ILS (Instrument Landing System) Area Violation Monitor is the Safety Net responsible to alert when an aircraft operating inside one of the restricted ILS areas. For example the drive into or stop in one of the critical areas of the ILS are forbidden for their corresponding aircraft types. The sensitive areas of the ILS system are forbidden if an approaching aircraft is below a defined distance from the runway's threshold.

#### ***4.5.1.33 Final Target Distance Indicator (FTD)***

The Final Target Distance (FTD) Indicator is the spacing indicator corresponding to the minimum separation (distance-based or time-based) applicable between two aircraft during the final approach at the separation delivery point.

#### ***4.5.1.34 Initial Target Distance Indicator (ITD)***

The Initial Target Distance (ITD) Indicator is the spacing indicator corresponding to the FTD increased by a compression buffer that takes into account the aircraft deceleration profile, the headwind profile and the final stabilized approach speeds between two aircraft during the final approach.

**4.5.1.35 Wake Vortex Indicator Infringement Alert (IIA)**

Alert raised when during final approach the following aircraft gets closer to the leading aircraft than permitted. On the CWP this means that the following aircraft flies ahead of the displayed position indicator.

**4.5.1.36 Sequence Warning (SQW)**

This alert is raised when an aircraft on final approach is not in the correct position with respect of the intended approach sequence.

**4.5.1.37 Catch Up Warning (CUW)**

This alert is raised when the Safety Net System determines that during final approach the following aircraft is catching up with the leading aircraft in a way that it is likely that it will pass the indicator showing the minimum distance from the leading aircraft. This alert is an early indication that a Wake Vortex Indicator Infringement Alert (IIA, Message Type = 35) may follow.

**4.5.1.38 Lost Track Warning (LTW)**

The Lost Track Warning is the Safety Net function responsible to alert in situations when a track is terminated or becomes too old where it is not expected to happen.

**4.5.1.39 Holding Volume Infringement (HVI)**

The Holding Volume Infringement is the Safety Net function responsible to alert in situations when an aircraft enters or is predicted to enter a Holding Volume for which it does not have the clearance to hold.

**4.5.1.40 Airspace Infringement Warning (AIW)**

The Airspace Infringement Warning warns the controller if an aircraft deviates into a sector it should not be passing through.  
The pAIW (primary AIW) sub-function specifically applies to primary-only tracks.

**4.5.1.41 Conflicting ATC Clearances (CATC)**

This alert is raised when the Air Traffic Controller issues an ATC Clearance that is in conflict with another previously issued clearance.

**4.5.1.42 No ATC Clearance (NOCLR)**

This alert is raised when an aircraft moves without having received an ATC Clearance from a Controller.

**4.5.1.43 Aircraft Not Moving despite ATC Clearance (NOMOV)**

This alert is raised when an aircraft is stationary despite having received an ATC Clearance.

**4.5.1.44 Aircraft Leaving/Entering Aerodrome Area without Handover (NOH)**

This alert is raised when an aircraft leaves/enters the aerodrome area without a proper handover between ATC Units having taken place.

**4.5.1.45 Wrong Runway or Taxiway Type (WRTY)**

This alert is raised when a Runway or Taxiway has been assigned that is not suitable for the aircraft type.

**4.5.1.46 Stand Occupied (STOCC)**

This alert is raised when the assigned parking position of an inbound flight is occupied by another aircraft at a certain time prior to the Estimated In Block Time (EIBT).

**4.5.1.47 Ongoing Alert (ONGOING)**

This alert is raised when a Runway Alert is active and another clearance is issued for the same Runway.

**4.5.1.48 Non-Transgression Zone Alert (NTZ)**

This alert is raised when an aircraft enters the Non-Transgression Zone (NTZ) between two runways operating as independent parallel landing runways.

**4.5.2 User Application Profile and Data Block**

A single UAP has been standardised and shall be used to transmit messages from a Safety Net to user systems.

Data Blocks containing Safety Net messages shall have the following layout:

<b>CAT = 004</b>	<b>LEN</b>	<b>FSPEC</b>	Items of the first record		<b>FSPEC</b>	Items of the last record
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Where:

- \* CAT = 004 is a one-octet field indicating that the Data Block contains safety net messages;
- \* LEN is a two-octet field indicating the total length in octets of the Data Block, including the CAT and LEN fields;
- \* FSPEC is the Field Specification.

**4.6 Composition of Messages**

**4.6.1** Messages shall be composed of Data Items assembled in the order defined by the Field Reference Number (FRN) in the associated UAP.

**4.9.2** When sent, items shall always be transmitted in a Record with the corresponding FSPEC bits set to one.

## 5. SAFETY NETS CONCEPTS AND FURTHER READING

Sometimes, the safest systems fail. That is why safety nets are needed - to provide additional System Safety Defences.

STCA directly assists in preventing collision between aircraft whilst APW does so indirectly by predicting or detecting violations of traffic segregation rules. Minimum Safe Altitude Warning (MSAW) and Approach Path Monitor (APM) assist in preventing controlled flight into terrain accidents.

The features of Safety Nets systems are in continual development and over the decades the systems have evolved to meet the needs of Air Navigation Service Providers in diverse operational environments.

High level specifications and comprehensive guidance material for STCA, MSAW, APM and APW can be found on the EUROCONTROL safety nets web pages: <http://www.eurocontrol.int/safety>.

## **6. LAYOUT OF SAFETY NET MESSAGES**

### **6.1 Standard Data Items**

The standardised Data Items, which shall be used for the transmission of safety net messages, are described in the following pages.

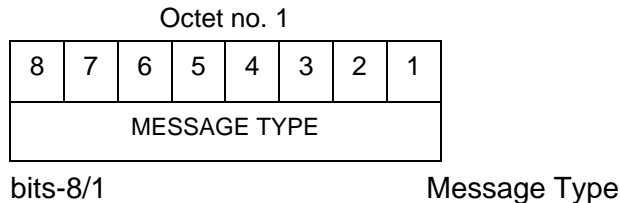
## 6.2 Description of Standard Data Items

### 6.2.1 Data Item I004/000, Message Type

**Definition :** This Data Item allows for a more convenient handling of the messages at the receiver side by further defining the type of transaction.

**Format :** One-octet fixed length Data Item.

**Structure:**



**Encoding Rule:**

This data item shall be present in every ASTERIX record.

#### NOTES

1. In applications where transactions of various types are exchanged, the Message Type Data Item facilitates the proper message handling at the receiver side.
2. All Message Type values are reserved for common standard use.
3. The following set of Message Types are standardised for Category 004 records:
  - \* 001 Alive Message (AM)
  - \* 002 Route Adherence Monitor Longitudinal Deviation (RAMLD)
  - \* 003 Route Adherence Monitor Heading Deviation (RAMHD)
  - \* 004 Minimum Safe Altitude Warning (MSAW)
  - \* 005 Area Proximity Warning (APW)
  - \* 006 Clearance Level Adherence Monitor (CLAM)
  - \* 007 Short Term Conflict Alert (STCA)
  - \* 008 Approach Path Monitor (APM)
  - \* 009 RIMCAS Arrival / Landing Monitor (ALM)
  - \* 010 RIMCAS Arrival / Departure Wrong Runway Alert (WRA)
  - \* 011 RIMCAS Arrival / Departure Opposite Traffic Alert (OTA)
  - \* 012 RIMCAS Departure Monitor (RDM)
  - \* 013 RIMCAS Runway / Taxiway Crossing Monitor (RCM)
  - \* 014 RIMCAS Taxiway Separation Monitor (TSM)
  - \* 015 RIMCAS Unauthorized Taxiway Movement Monitor(UTMM)
  - \* 016 RIMCAS Stop Bar Overrun Alert (SBOA)
  - \* 017 End Of Conflict (EOC)
  - \* 018 ACAS Resolution Advisory (ACASRA)
  - \* 019 Near Term Conflict Alert (NTCA)
  - \* 020 Downlinked Barometric Pressure Setting Monitor (DBPSM)
  - \* 021 Speed Adherence Monitor (SAM)
  - \* 022 Outside Controlled Airspace Tool (OCAT)

- \* 023 Vertical Conflict Detection (VCD)
- \* 024 Vertical Rate Adherence Monitor (VRAM)
- \* 025 Cleared Heading Adherence Monitor (CHAM)
- \* 026 Downlinked Selected Altitude Monitor (DSAM)
- \* 027 Holding Adherence Monitor (HAM)
- \* 028 Vertical Path Monitor (VPM)
- \* 029 RIMCAS Taxiway Traffic Alert (TTA)
- \* 030 RIMCAS Arrival/Departure Close Runway Alert (CRA)
- \* 031 RIMCAS Arrival/Departure Aircraft Separation Monitor (ASM)
- \* 032 RIMCAS ILS Area Violation Monitor (IAVM)
- \* 033 Final Target Distance Indicator (FTD)
- \* 034 Initial Target Distance Indicator (ITD)
- \* 035 Wake Vortex Indicator Infringement Alert (IIA)
- \* 036 Sequence Warning (SQW)
- \* 037 Catch Up Warning (CUW)
- \* 038 Conflicting ATC Clearances (CATC)
- \* 039 No ATC Clearance (NOCLR)
- \* 040 Aircraft Not Moving despite ATC Clearance (NOMOV)
- \* 041 Aircraft leaving/entering the aerodrome area without proper handover (NOH)
- \* 042 Wrong Runway or Taxiway Type (WRTY)
- \* 043 Stand Occupied (STOCC)
- \* 044 Ongoing Alert (ONGOING)
- \* 045 Non-Transgression Zone Violation (NTZ)
- \* 097 Lost Track Warning (LTW)
- \* 098 Holding Volume Infringement (HVI)
- \* 099 Airspace Infringement Warning (AIW)

4. Message Types 33 to 37 have been designed for applications supporting the ATCO in the optimisation of separation during final approach. They provide information required to indicate to the ATCO the closest possible distance of a following aircraft in relation to a leading aircraft. This allows to make optimum use of the available runway capacity.

5. The list of items present for the 31 types of messages is defined in the following 4 tables.

M stands for mandatory, O for optional, X for never present.

Type Item	001 Alive Message	002 RAMLD	003 RAMHD	004 MSAW	005 APW	006 CLAM	007 STCA	008 APM
I004/000	M	M	M	M	M	M	M	M
I004/010	M	M	M	M	M	M	M	M
I004/015	O	O	O	O	O	O	O	O
I004/020	M	M	M	M	M	M	M	M
I004/030	X	M	M	M	M	M	M	M
I004/035	X	X	X	X	X	X	M	X
I004/040	X	M	M	M	M	M	M	M
I004/045	X	O	O	O	O	O	O	O
I004/060	M	X	X	X	X	X	X	X
I004/070	X	X	X	O	O	X	O	X
I004/074	X	M	X	X	X	X	X	X
I004/075	X	X	M	X	X	X	X	M
I004/076	X	X	X	X	X	O	X	O
I004/100	X	X	X	X	M	X	X	O
I004/110	X	O	O	O	O	O	O	O
I004/120	X	X	X	M	M	X	M	X
I004/170	X	O	O	O	O	O	O	O
I004/171	X	X	X	X	X	X	O	X
I004/RE	O	O	O	O	O	O	O	O

**Table 1 : Message Types 001 - 008**

Type	009	010	011	012	013	014	015	016
Item	ALM	WRA	OTA	RDM	RCM	TSM	UTMM	SBOA
I004/000	M	M	M	M	M	M	M	M
I004/010	M	M	M	M	M	M	M	M
I004/015	O	O	O	O	O	O	O	O
I004/020	M	M	M	M	M	M	M	M
I004/030	M	M	M	M	M	M	M	M
I004/035	M	X	M	M	M	M	O	X
I004/040	M	M	M	M	M	M	M	M
I004/045	O	O	O	O	O	O	O	O
I004/060	X	X	X	X	X	X	X	X
I004/070	O	X	O	O	O	O	O	X
I004/074	X	X	X	X	X	X	X	X
I004/075	X	X	X	X	X	X	X	X
I004/076	X	X	X	X	X	X	X	X
I004/100	M	M	M	M	M	M	M	M
I004/110	O	O	O	O	O	O	O	O
I004/120	M	M	M	M	M	O	O	O
I004/170	O	O	O	O	O	O	O	O
I004/171	O	X	O	O	O	O	O	X
I004/RE	O	O	O	O	O	O	O	O

Table 2 : Message Types 009 – 016

Type	017	018	019	020	021	022	023	024
Item	EOC	ACASRA	NTCA	DBPSM	SAM	OCAT	VCD	VRAM
I004/000	M	M	M	M	M	M	M	M
I004/010	M	M	M	M	M	M	M	M
I004/015	O	O	O	O	O	O	O	O
I004/020	M	M	M	M	M	M	M	M
I004/030	O	X	M	M	M	M	M	M
I004/035	O	X	M	X	X	X	M	X
I004/040	M	M	M	M	M	M	M	M
I004/045	O	O	O	O	O	O	O	O
I004/060	X	X	X	X	X	X	X	X
I004/070	X	O	O	X	X	O	O	X
I004/074	X	X	X	X	X	X	X	X
I004/075	X	X	X	X	X	X	X	X
I004/076	X	X	X	X	X	X	X	O
I004/100	X	X	X	O	O	M	M	O
I004/110	X	X	O	O	O	O	O	O
I004/120	X	X	O	M	O	M	M	O
I004/170	X	M	O	O	O	O	O	O
I004/171	X	O	O	X	X	X	O	X
I004/RE	O	M	O	O	O	O	O	O

Table 3 : Message types 017 – 024

Type	025	026	027	028	029	030	031	032
Item	CHAM	DSAM	HAM	VPM	TTA	CRA	ASM	IAVM
I004/000	M	M	M	M	M	M	M	M
I004/010	M	M	M	M	M	M	M	M
I004/015	O	O	O	O	O	O	O	O
I004/020	M	M	M	M	M	M	M	M
I004/030	M	M	M	M	M	M	M	M
I004/035	X	X	X	X	O	O	M	O
I004/040	M	M	M	M	M	M	M	M
I004/045	O	O	O	O	O	O	O	O
I004/060	X	X	X	X	X	X	X	X
I004/070	X	X	X	X	O	O	O	O
I004/074	X	X	O	X	O	X	X	X
I004/075	X	X	X	X	O	X	X	X
I004/076	X	O	O	O	O	X	X	X
I004/100	O	O	O	O	O	O	O	O
I004/110	O	O	O	O	O	O	O	O
I004/120	O	O	O	X	O	O	O	O
I004/170	O	O	O	O	O	O	O	O
I004/171	X	X	X	X	O	O	O	O
I004/RE	O	O	O	O	O	O	O	O

Table 4 : Message types 025 – 032

Type	033	034	035	036	037	038	039	040
Item	FTD	ITD	IIA	SQW	CUW	CATC	NOCLR	NOMOV
I004/000	M	M	M	M	M	M	M	M
I004/010	M	M	M	M	M	M	M	M
I004/015	O	O	O	O	O	O	O	O
I004/020	M	M	M	M	M	M	M	M
I004/030	M	M	M	M	M	M	M	M
I004/035	M	M	M	X	O	M	X	X
I004/040	M	M	M	M	M	M	M	M
I004/045	O	O	O	O	O	O	O	O
I004/060	X	X	X	X	X	X	X	X
I004/070	O	O	M	X	X	X	X	X
I004/074	X	X	X	X	X	X	X	X
I004/075	X	X	X	X	X	X	X	X
I004/076	X	X	X	X	X	X	X	X
I004/100	O	O	O	O	O	O	O	O
I004/110	X	X	X	X	X	O	O	O
I004/120	M	M	O	X	X	M	M	M
I004/170	M	M	M	M	M	O	O	O
I004/171	M	M	M	X	M	O	X	X
I004/RE	O	O	M	O	O	O	O	O

Table 5 : Message types 033 – 040

Type	041	042	043	044	045	097	098	099
Item	NOH	WRTY	STOCC	ONGOING	NTZ	LTW	HVI	AIW
I004/000	M	M	M	M	M	M	M	M
I004/010	M	M	M	M	M	M	M	M
I004/015	O	O	O	O	O	O	O	O
I004/020	M	M	M	M	M	M	M	M
I004/030	M	M	M	M	M	M	M	M
I004/035	X	X	X	O	X	X	X	X
I004/040	M	M	M	M	M	M	M	M
I004/045	O	O	O	O	O	O	O	O
I004/060	X	X	X	X	X	X	X	X
I004/070	X	X	X	X	O	O	O	O
I004/074	X	X	X	X	X	X	X	X
I004/075	X	X	X	X	X	X	X	X
I004/076	X	X	X	X	X	X	X	X
I004/100	O	M	M	M	O	O	O	O
I004/110	O	O	O	O	O	O	O	O
I004/120	M	O	X	X	M	O	O	O
I004/170	O	O	O	O	O	O	O	O
I004/171	X	X	X	X	X	X	X	X
I004/RE	O	O	O	O	O	M	O	O

**Table 6 : Message types 041 – 099**

**NOTE** - Message types 097-099 were chosen because they are already assigned in an existing system.

**6.2.2 Data Item I004/010 Data Source Identifier****Definition :** Identification of the Safety Nets server sending the message.**Format :** Two-octet fixed length Data Item.**Structure:**

Octet no. 1								Octet no. 2							
16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
SAC								SIC							

bits-16/9 (SAC) System Area Code

bits-8/1 (SIC) System Identification Code

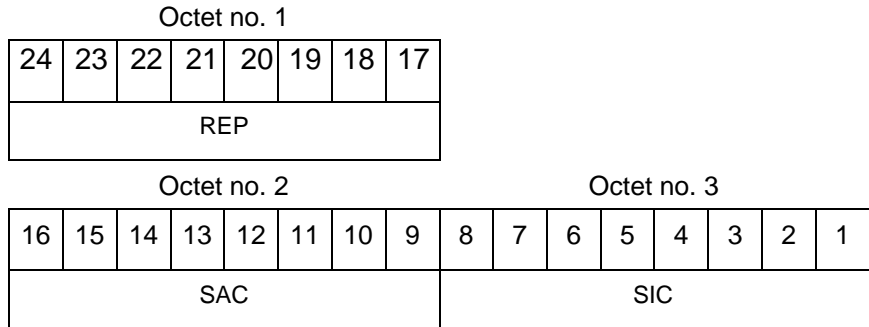
**NOTE** - The up-to-date list of SACs is published on the EUROCONTROL Web Site (<http://www.eurocontrol.int/asterix>).

**6.2.3 Data Item I004/015 SDPS Identifier**

**Definition :** Identification of the SDPS providing data to the safety nets server.

**Format :** Repetitive Data Item starting with one-octet Field Repetition Indicator (REP) followed by at least one SDPS Identifier.

**Structure:**



bits-24/17 (REP) Repetition Factor  
 bits-16/9 (SAC) System Area Code  
 bits-8/1 (SIC) System Identification Code

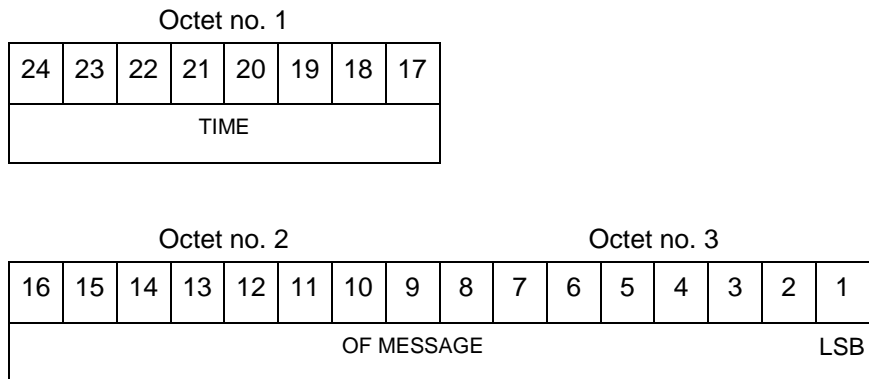
**NOTE -** The up-to-date list of SACs is published on the EUROCONTROL Web Site (<http://www.eurocontrol.int/asterix>).

**6.2.4 Data Item I004/020 Time of Message**

**Definition :** Absolute time stamping of the message in the form of elapsed time since last midnight

**Format :** Three-octet fixed length Data Item.

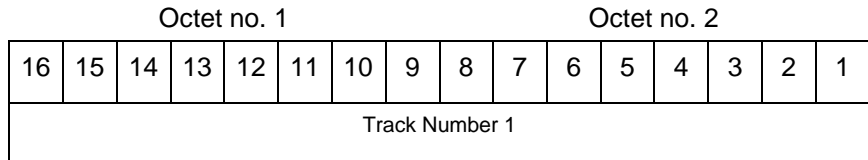
**Structure:**



bit-1 (LSB) = (2<sup>-7</sup>) sec = 1/128 sec

**NOTE -** This time is given at an application level (e.g. time at which a message is filled), and not at the communication level (i.e. not the time at which the data-block containing the message is sent).

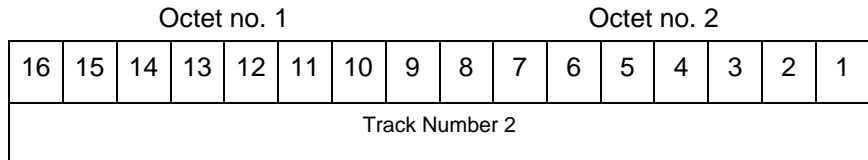
**NOTE -** The time is reset to zero at every midnight.

**6.2.5 Data Item I004/030 Track Number 1****Definition :** Identification of a track number related to conflict**Format :** Two-octet fixed length Data Item.**Structure:**

bits 16/1 ( TRACK NUMBER) : 0 to 65535

**NOTES**

1. This is the track number of the first track involved in the conflict in case of an STCA or a RIMCA or the track involved in case of one of the other Safety Net functions.
2. This track number is distributed in this field exactly as it was received from the Radar Processor Unit (identified by I004/015) and its range is depending on the range used by that unit.
3. In case of Message Type = 33 (Final Target Distance Indicator - FTD) this represents the Track Number of the following aircraft.
4. In case of Message Type = 34 (Initial Target Distance Indicator - ITD) this represents the Track Number of the following aircraft.
5. In case of Message Type = 35 (Wake Vortex Indicator Infringement Alert - IIA) this represents the track number of the following aircraft.
6. In case of Message Type = 37 (Catch-Up Warning - CUW) this represents the track number of the following aircraft (i.e. the one catching up).

**6.2.6 Data Item I004/035 Track Number 2****Definition :** Together with I004/030, this item defines the track pair in conflict.**Format :** Two-octet fixed length Data Item.**Structure:**

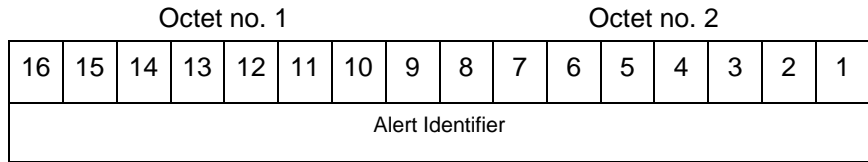
bits 16/1 ( TRACK NUMBER) : 0 to 65535

**NOTES**

1. This is the track number of the second track involved in the conflict in case of an STCA, a RIMCA, a NTCA, a VCD or in message types 33 to 35 and 37.
2. For the other Safety Net functions, this item is not used.
3. This track number is distributed in this field exactly as it was received from the Radar Processor Unit and its range is depending on the range used by that unit.
4. In case of Message Type = 33 (Final Target Distance Indicator - FTD) this represents the Track Number of the leading aircraft
5. In case of Message Type = 34 (Initial Target Distance Indicator - ITD) this represents the Track Number of the leading aircraft.
6. In case of Message Type = 35 (Wake Vortex Indicator Infringement Alert - IIA) this represents the track number of the leading aircraft.
7. In case of Message Type = 37 (Catch-Up Warning - CUW) this represents the track number of the leading aircraft.
8. In case of Message Type = 38 (Conflicting ATC Clearances - CATC) this represents the track number of the aircraft to which the first ATC Clearance was issued.

**6.2.7 Data Item I004/040 Alert Identifier**

**Definition :** Identification of an alert (Alert number)  
**Format :** Two-octet fixed length Data Item.  
**Structure:**



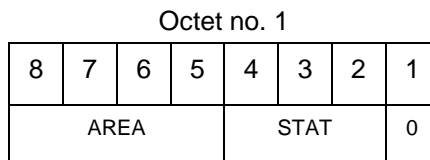
bits 16/1 ( Alert Identifier) : 0 to 65535

**NOTES**

1. This item is the Alert Identification of the conflict in the system
2. This number shall be assigned, by the Safety Net Server, for instance incrementally to every new alert and restart on zero after reaching the maximum value (65535)

**6.2.8 Data Item I004/045 Area and Alert Status**

**Definition :** Information concerning status of the alert and the area involved in the Safety Net Alert.  
**Format :** One-octet fixed length Data Item.  
**Structure:**



bits-8/5 (AREA)	Area Status	
bit-8 (AREA#EP)	Element Populated Bit	= 0 Element not populated
		= 1 Element populated
bits-7/5 (AREA#VAL)	Area Status Value	= 0 Inactive
		= 1 Active
		= 2 Pre-Active
		= 3 - 7 Reserved for Future Use
bits-4/2 (STAT)	Status of the alert	
bit-1 (SPARE)	Spare bit set to 0	

The content of this item is implementation dependent.

**6.2.9 Data Item I004/060 Safety Net Function & System Status****Definition :** Status of the Safety Nets functions handled by the system**Format :** Variable length Data Item comprising a first part of one octet, followed by one-octet extents as necessary.**Structure:**

Octet no. 1

8	7	6	5	4	3	2	1
MRVA	RAML D	RAMHD	MSAW	APW	CLAM	STCA	FX

bit-8	(MRVA)	= 0	Default
		= 1	MRVA function
bit-7	(RAMLD)	= 0	Default
		= 1	RAML D function
bit-6	(RAMHD)	= 0	Default
		= 1	RAMHD function
bit-5	(MSAW)	= 0	Default
		= 1	MSAW function
bit-4	(APW)	= 0	Default
		= 1	APW function
bit-3	(CLAM)	= 0	Default
		= 1	CLAM function
bit-2	(STCA)	= 0	Default
		= 1	STCA function
bit-1	(FX)	= 0	No extension
		= 1	Extension

**Structure of First Extension to I004/060:**

Octet no. 2

8	7	6	5	4	3	2	1
APM	RIMCA	ACASRA	NTCA	DG	OF	OL	FX

bit-8	(APM)	= 0	Default
		= 1	APM function
bit-7	(RIMCA)	= 0	Default
		= 1	RIMCA function
bit-6	(ACASRA)	= 0	Default
		= 1	ACAS RA function
bit-5	(NTCA)	= 0	Default
		= 1	NTCA function
bit 4	(DG)	= 0	Default
		= 1	System degraded
bit-3	(OF)	= 0	Default
		= 1	Overflow error
bit-2	(OL)	= 0	Default
		= 1	Overload error
bit-1	(FX)	= 0	No extension
		= 1	Extension

**Structure of Second Extension to I004/060:**

Octet no. 3

8	7	6	5	4	3	2	1
AIW	pAIW	OCAT	SAM	VCD	CHAM	DSAM	FX

bit-8	(AIW)	=0	Default
		=1	AIW function
bit-7	(pAIW)	=0	Default
		=1	pAIW function
bit-6	(OCAT)	= 0	Default
		=1	OCAT function
bit 5	(SAM)	=0	Default
		=1	SAM function
bit 4	(VCD)	=0	Default
		=1	VCD function
bit-3	(CHAM)	=0	Default
		=1	CHAM function
bit-2	(DSAM)	=0	Default
		=1	DSAM function
bit-1	(FX)	= 0	No extension
		= 1	Extension

**Structure of Third Extension to I004/060:**

Octet no.4

8	7	6	5	4	3	2	1
DBPSM ARR	DBPSM DEP	DBPSM TL	VRAM CRM	VRAM VTM	VRAM VRM	HAM HD	FX

- bit-8 (DBPSM ARR) =0 Default  
=1 DBPSM ARR sub-function
- bit-7 (DBPSM DEP) =0 Default  
=1 DBPSM DEP sub-function
- bit-6 (DBPSM TL) =0 Default  
=1 DBPSM TL sub-function
- bit-5 (VRAM CRM) =0 Default  
=1 VRAM CRM sub-function
- bit-4 (VRAM VTM) =0 Default  
=1 VRAM VTM sub-function
- bit-3 (VRAM VRM) =0 Default  
=1 VRAM VRM sub-function
- bit-2 (HAM HD) =0 Default  
=1 HAM HD sub-function
- bit-1 (FX) = 0 No extension  
= 1 Extension

**Structure of Fourth Extension to I004/060:**

Octet no. 5

8	7	6	5	4	3	2	1
HAM RD	HAM VD	HVI	LTW	VPM	TTA	CRA	FX

- bit-8 (HAM RD) =0 Default  
=1 HAM RD sub-function
- bit-7 (HAM VD) =0 Default  
=1 HAM VD sub-function
- bit-6 (HVI) =0 Default  
=1 HVI function
- bit-5 (LTW) =0 Default  
=1 LTW function
- bit-4 (VPM) =0 Default  
=1 VPM function
- bit-3 (TTA) =0 Default  
=1 TTA function
- bit-2 (CRA) =0 Default  
=1 CRA function
- bit-1 (FX) = 0 No extension  
= 1 Extension

**Structure of Fifth Extension to I004/060:**

Octet no. 6

8	7	6	5	4	3	2	1
ASM	IAVM	FTD	ITD	IIA	SQW	CUW	FX

- bit-8 (ASM) =0 Default  
=1 ASM sub-function
- bit-7 (IAVM) =0 Default  
=1 IAVM sub-function
- bit-6 (FTD) =0 Default  
=1 FTD function
- bit-5 (ITD) =0 Default  
=1 ITD function
- bit-4 (IIA) =0 Default  
=1 IIA function
- bit-3 (SQW) =0 Default  
=1 SW function
- bit-2 (CUW) =0 Default  
=1 CUW function
- bit-1 (FX) = 0 No extension  
= 1 Extension

**Structure of Sixth Extension to I004/060:**

Octet no. 7

8	7	6	5	4	3	2	1
CATC	NOCLR	NOMOV	NOH	WRTY	STOCC	ONGOING	FX

- bit-8 (CATC) =0 Default  
=1 CATC function
- bit-7 (NOCLR) =0 Default  
=1 NOCLR sub-function
- bit-6 (NOMOV) =0 Default  
=1 NOMOV function
- bit-5 (NOH) =0 Default  
=1 NOH function
- bit-4 (WRTY) =0 Default  
=1 WRTY function
- bit-3 (STOCC) =0 Default  
=1 STOCC function
- bit-3 (ONGOING) =0 Default  
=1 ONGOING function

bit-1 (FX) = 0 No extension  
 = 1 Extension

**Structure of Seventh Extension to I004/060:**

Octet no. 8

8	7	6	5	4	3	2	1
NTZ	0	0	0	0	0	0	FX

bit-8 (NTZ) =0 Default  
 =1 Non-Transgression Zone function

bits-7/2 (SPARE) Spare Bits, set to 0

bit-1 (FX) = 0 No extension  
 = 1 Extension

**NOTES**

1. This item only sent in “alive messages” to describe the status of the Safety Net functions, handled by the system
2. Value 0 means either that the function is not managed by the system or has failed.
3. Value 1 means that the function is managed by the system and is running well
4. “Overflow” is defined as a situation where the number of alerts in the system has exceeded the threshold for safe operation. Potential prioritization of the alerts may lead to a loss of information.
5. “Overload” is defined as a system status in which the number of alerts does not allow for a reliable performance. A correct calculation and transmission cannot be guaranteed.
6. “System degraded” means that information from one or more sensors is lost.

**6.2.10 Data Item I004/070, Conflict Timing and Separation****Definition :** Information on Timing and Aircraft Separation**Format :** Compound Data Item, comprising a primary subfield of one octet, followed by the indicated subfields.**Structure of Primary Subfield:**

Octet no. 1							
8	7	6	5	4	3	2	1
TC	TCA	CHS	MHS	CVS	MVS	0	FX

bit-8	(TC)	Subfield #1: Time to Conflict = 0   Absence of Subfield #1 = 1   Presence of Subfield #1
bit-7	(TCA)	Subfield #2: Time to Closest Approach = 0   Absence of Subfield #2 = 1   Presence of Subfield #2
bit-6	(CHS)	Subfield #3: Current Horizontal Separation = 0   Absence of Subfield #3 = 1   Presence of Subfield #3
bit-5	(MHS)	Subfield #4: Estimated Minimum Horizontal Separation = 0   Absence of Subfield #4 = 1   Presence of Subfield #4
bit-4	(CVS)	Subfield #5: Current Vertical Separation = 0   Absence of Subfield #5 = 1   Presence of Subfield #5
bit-3	(MVS)	Subfield #6: Estimated Minimum Vertical Separation = 0   Absence of Subfield #6 = 1   Presence of Subfield #6
bit-2		Spare Bit, Set to 0
bit-1	(FX)	Extension Indicator = 0   no extension = 1   extension

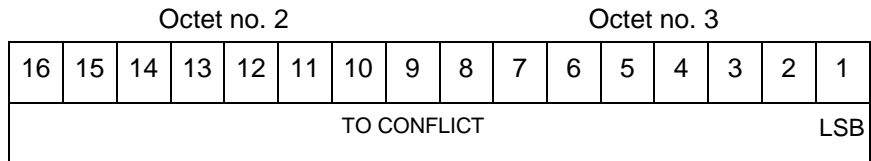
**Structure of I004/070 - Subfield #1:**

**Time to Conflict:**

**Definition :** Time remaining to actual conflict situation

**Format :** Three-octet fixed length Data Item.

**Structure:**



bit-1 (LSB) =  $(2^{-7})$  sec = 1/128 sec

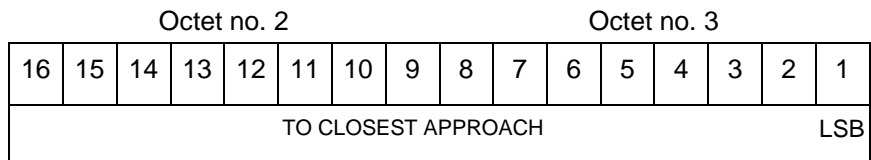
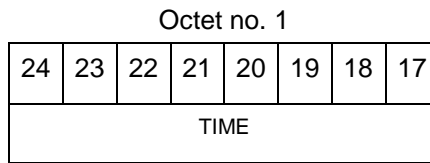
**Structure of I004/070 - Subfield #2:**

**Time to Closest Approach**

**Definition :** Time to closest proximity between entities in conflict

**Format :** Three-octet fixed length Data Item.

**Structure:**



bit-1 (LSB) =  $(2^{-7})$  sec = 1/128 sec

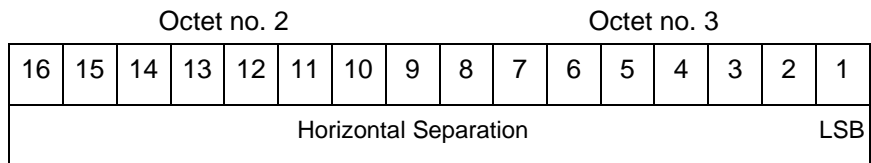
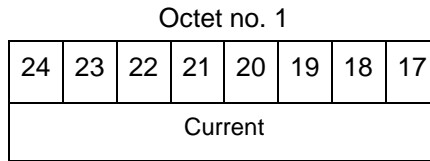
**Structure of I004/070 - Subfield #3:**

**Current Horizontal Separation**

**Definition :** Current horizontal separation

**Format :** Three-octet fixed length Data Item.

**Structure:**



bits 24/1 (Current horizontal separation)  
 LSB = 0.5m

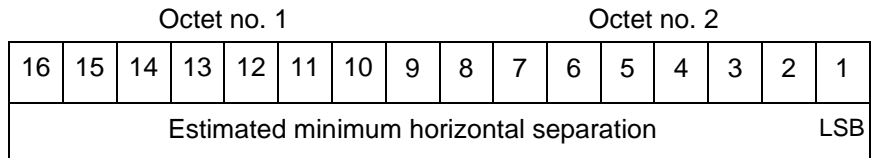
**Structure of I004/070 - Subfield #4:**

**Estimated Minimum Horizontal Separation**

**Definition :** Estimated minimum horizontal separation.

**Format :** Two-octet fixed length Data Item.

**Structure:**



bits 16/1 (Estimated minimum horizontal separation)  
 LSB = 0.5m

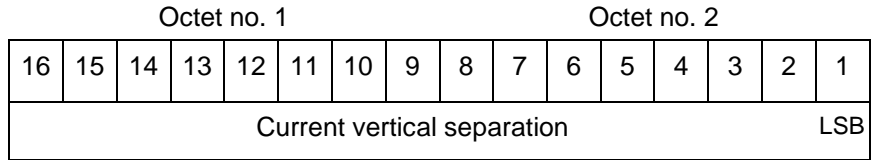
**Structure of I004/070 - Subfield #5:**

**Current Vertical Separation**

**Definition :** Current vertical separation

**Format :** Two-octet fixed length Data Item.

**Structure:**



bits 16/1                      (Current vertical separation)  
 LSB = 25 ft

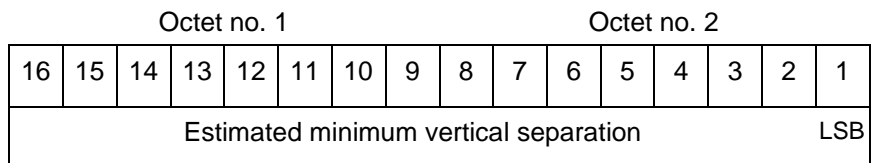
**Structure of I004/070 - Subfield #6:**

**Estimated Minimum Vertical Separation**

**Definition :** Estimated minimum vertical separation.

**Format :** Two-octet fixed length Data Item.

**Structure:**



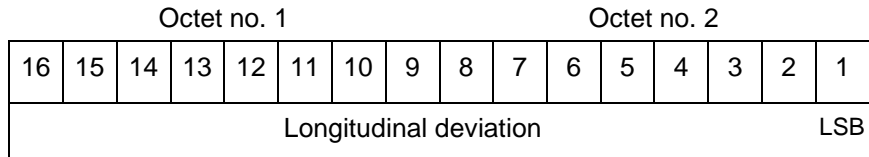
bits 16/1                      (Estimated minimum vertical separation)  
 LSB = 25 ft

**6.2.11 Data Item I004/074, Longitudinal Deviation**

**Definition :** Longitudinal deviation for Route Adherence Monitoring, in two's complement.

**Format :** Two-octet fixed length Data Item.

**Structure:**



bits 16/1 (Longitudinal deviation)  
LSB = 32m

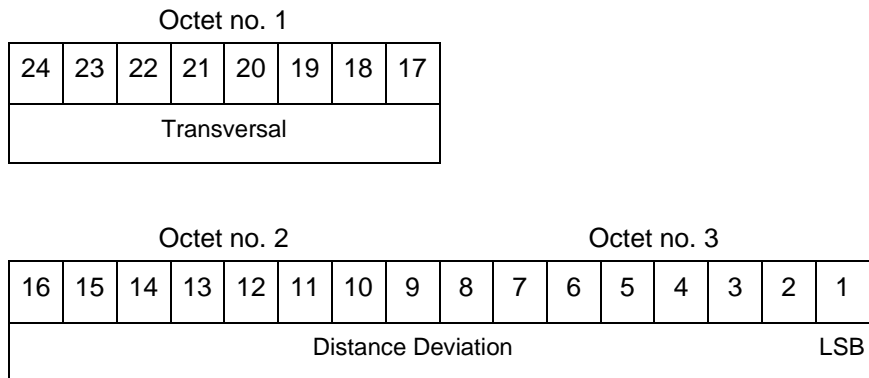
**NOTE -** Longitudinal deviation will be positive if the aircraft is ahead of its planned position.  
Longitudinal deviation will be negative if the aircraft is behind its planned position.

**6.2.12 Data Item I004/075, Transversal Distance Deviation**

**Definition :** Transversal distance deviation for Route Adherence Monitoring, in two's complement.

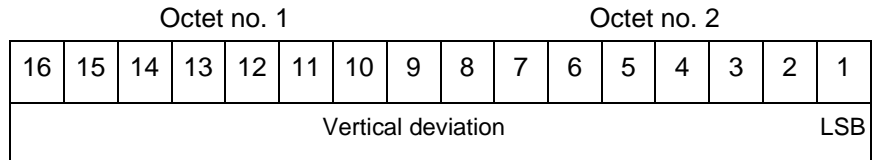
**Format :** Three-octet fixed length Data Item.

**Structure:**



bits 24/1 (Current horizontal separation)  
LSB = 0.5m

**NOTE -** Deviation to the right of the track will be coded as a positive value.  
Deviation to the left of the track will be coded as a negative value

**6.2.13 Data Item I004/076, Vertical Deviation****Definition :** Vertical Deviation from planned altitude, in two's complement**Format :** Two-octet fixed length Data Item.

bits 16/1

(Vertical deviation)

LSB = 25 ft

**NOTE -** Positive value if aircraft is above planned altitude  
 Negative value if aircraft is below planned altitude

**6.2.14 Data Item I004/100, Area Definition****Definition :** Definition of Areas involved in a Safety Net Alert**Format :** Compound Data Item, comprising a primary subfield of one octet, followed by the indicated subfields.**Structure of Primary Subfield:**

Octet no. 1

8	7	6	5	4	3	2	1
AN	CAN	RT1	RT2	SB	G	0	FX

bit-8	(AN)	Subfield #1: Area Name = 0 Absence of Subfield #1 = 1 Presence of Subfield #1
bit-7	(CAN)	Subfield #2: Crossing Area Name = 0 Absence of Subfield #2 = 1 Presence of Subfield #2
bit-6	(RT1)	Subfield #3: Runway/Taxiway Designator 1 = 0 Absence of Subfield #3 = 1 Presence of Subfield #3
bit-5	(RT2)	Subfield #4: Runway/Taxiway Designator 2 = 0 Absence of Subfield #4 = 1 Presence of Subfield #4
bit-4	(SB)	Subfield #5: Stop Bar Designator = 0 Absence of Subfield #5 = 1 Presence of Subfield #5
bit-3	(G)	Subfield #6: Gate Designator = 0 Absence of Subfield #6 = 1 Presence of Subfield #6
bit-2		Spare Bit, Set to 0
bit-1	(FX)	Extension Indicator = 0 no extension = 1 extension

**Structure of I004/100 - Subfield #1:**

**Area Name:**

**Definition:** Name of the area involved in a Safety Net alarm

**Format:** Six-octet fixed length Data Item.

**Structure:**

Octet no. 1						Octet no. 2									
48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
Character 1						Character 2						Character 3			

Octet no. 3								Octet no. 4									
32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17		
				Character 4								Character 5					

Octet no. 5								Octet no. 6							
16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Character 6				Character 7								Character 8			

bits-48/1 Characters 1-8 (coded on 6 Bits each) defining the name of the area. Coding rules are provided in [3] Section 3.1.2.9

**NOTE** - The area name is always left adjusted. If needed, the remaining characters are filled with space character.

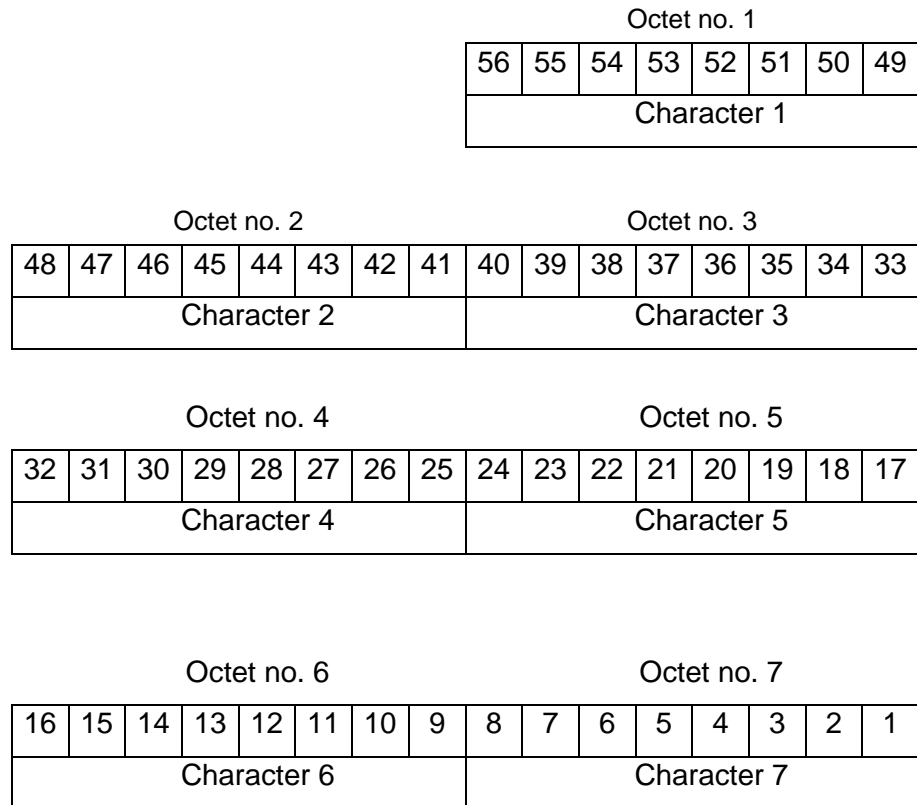
**NOTE** - For names exceeding the length of 8 characters, the Data Item I004/REF/EAN (Extended Area Name) is available in the Reserved Expansion Field and **shall** be populated.

**Structure of I004/100 - Subfield #2:  
Crossing Area Name**

**Definition:** Name of Crossing Area Involved in a RIMCA

**Format:** Seven-octet fixed length Data Item.

**Structure:**



bits-56/1

Each octet is an ASCII character defining the name of the crossing area involved in a runway/taxiway crossing alert (message type 013)

**NOTE** - The name of the crossing area is always left adjusted. If needed, the remaining characters are filled with space characters.

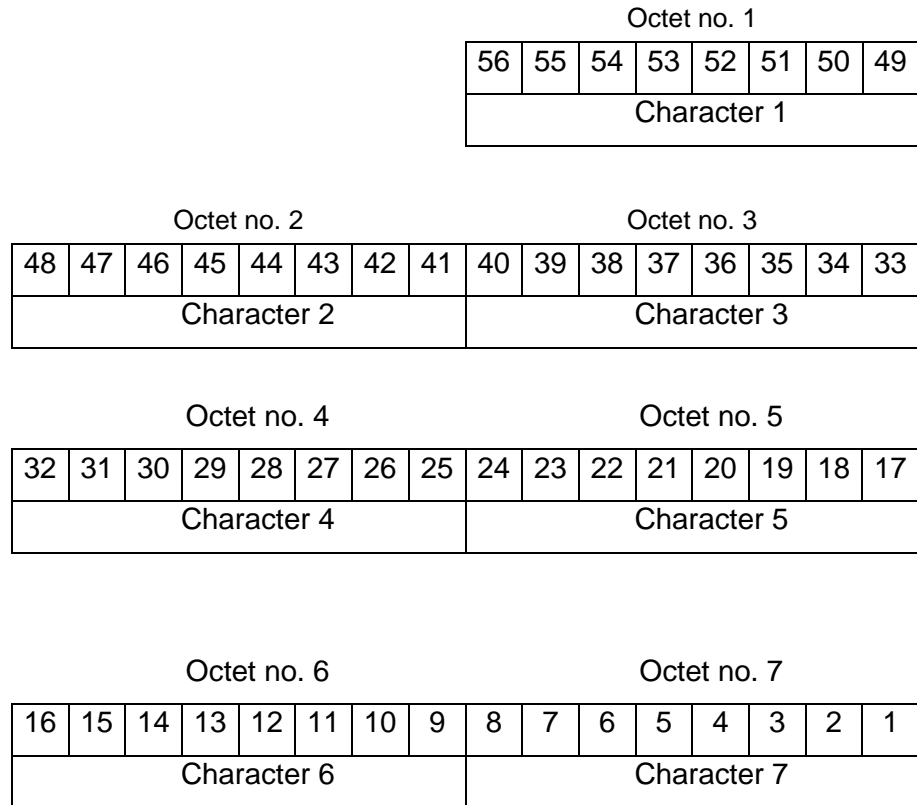
**Structure of I004/100 - Subfield #3:**

**Runway/Taxiway Designator 1**

**Definition:** Designator of Runway/Taxiway 1 Involved in a RIMCA

**Format:** Seven-octet fixed length Data Item.

**Structure:**



bits-56/1      Each octet is an ASCII character defining the runway designator

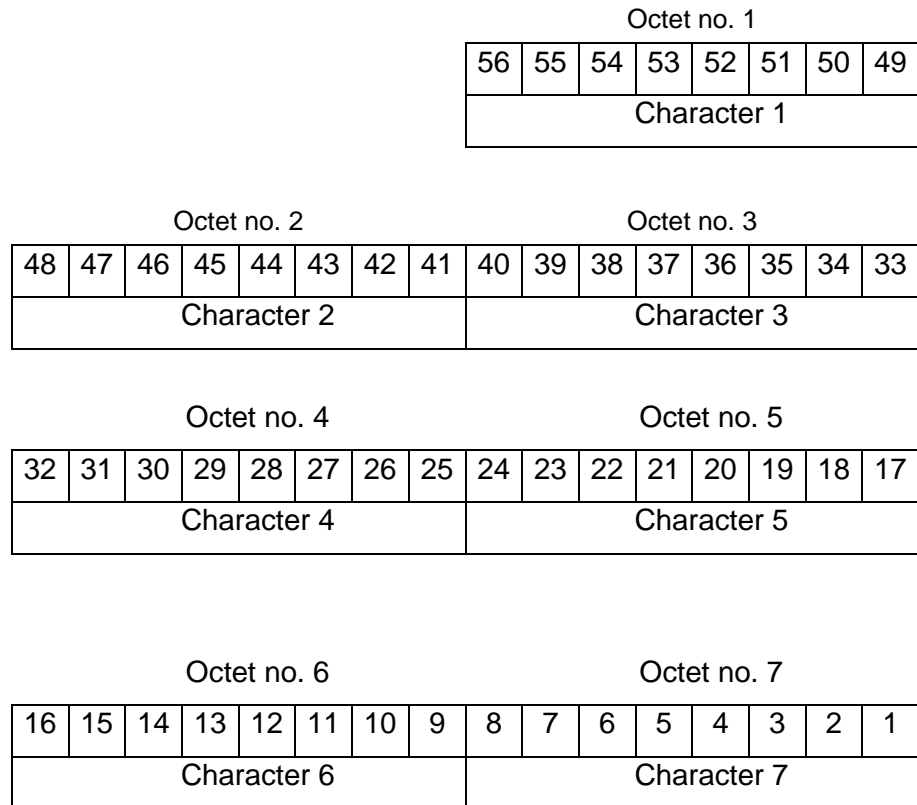
**NOTE -** The runway designator is always left adjusted. If needed, the remaining characters are filled with space characters.  
 The runway is encoded as follows: Location indicator, runway direction, left or right.  
 Example: EGLL09L means London Heathrow (EGLL), Runway 09 (direction 090 degrees) left runway

**Structure of Subfield I004/100 - #4:  
Runway/Taxiway Designator 2**

**Definition:** Designator of Runway/Taxiway 2 Involved in a RIMCA

**Format:** Seven-octet fixed length Data Item.

**Structure:**



bits-56/1      Each octet is an ASCII character defining the runway designator

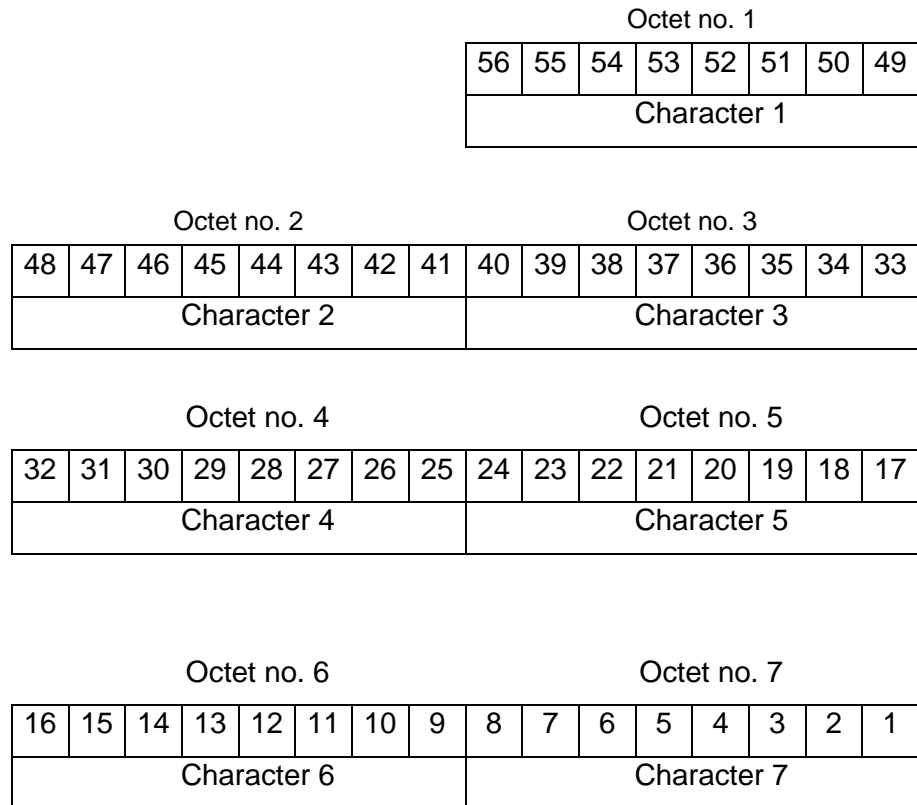
**NOTE -** The runway designator is always left adjusted. If needed, the remaining characters are filled with space characters.  
 The runway is encoded as follows: Location indicator, runway direction, left or right.  
 Example: EGLL09L means London Heathrow (EGLL), Runway 09 (direction 090 degrees) left runway

**Structure of I004/100 - Subfield #5:  
Stop Bar Designator**

**Definition:** Designator of Stop-Bar Involved in a RIMCA

**Format:** Seven-octet fixed length Data Item.

**Structure:**



bits-56/1

Each octet is an ASCII character defining the stop-bar involved in a stop-bar crossed alert (message type 016)

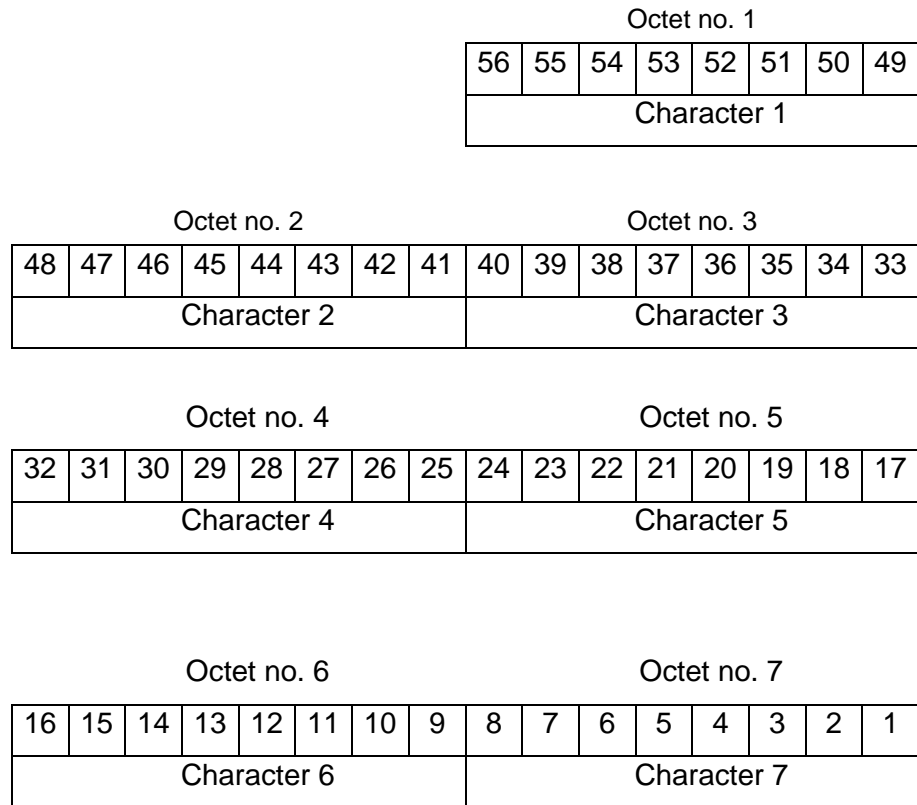
**NOTE -** The stop-bar designator is always left adjusted. If needed, the remaining characters are filled with space characters.

**Structure of I004/100 - Subfield #6:  
Gate Designator**

**Definition:** Gate Designator (in 7 characters) of the approaching aircraft in a RIMCA or a STOCC message

**Format:** Seven-octet fixed length Data Item.

**Structure:**



bits-56/1      Each octet is an ASCII character defining the gate for the approaching aircraft

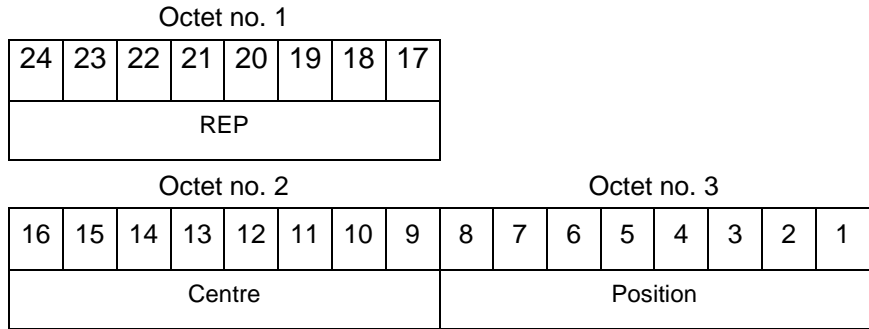
**NOTE -** The gate designator is always left adjusted. If needed, the remaining characters are filled with space character.

**6.2.15 Data Item I004/110, FDPS Sector Control Identification**

**Definition :** Identification of a list of FDPS Sector Control Positions in charge of the involved targets, as provided by the FDPS

**Format :** Repetitive Data Item starting with one-octet Field Repetition Indicator (REP) followed by at least one FDPS Sector Control Position

**Structure:**



bits 24/17	(REP)	Repetition Factor
bits 16/9	(Centre)	Centre identification code
bits 8/1	(Position)	Control position identification code

**NOTE -** The Centre identification code and the Control position identification code must be defined between the communication partners.

**6.2.16 Data Item I004/120, Conflict Characteristics****Definition :** Description of the Conflict Properties**Format :** Compound Data Item, comprising a primary subfield of one octet, followed by the indicated subfields.**Structure of Primary Subfield:**

Octet no. 1

8	7	6	5	4	3	2	1
CN	CC	CP	CD	0	0	0	FX

bit-8 (CN) Subfield #1: Conflict Nature  
 = 0 Absence of Subfield #1  
 = 1 Presence of Subfield #1

bit-7 (CC) Subfield #2: Conflict Classification  
 = 0 Absence of Subfield #2  
 = 1 Presence of Subfield #2

bit-6 (CP) Subfield #3: Conflict Probability  
 = 0 Absence of Subfield #3  
 = 1 Presence of Subfield #3

bit-5 (CD) Subfield #4: Conflict Duration  
 = 0 Absence of Subfield #4  
 = 1 Presence of Subfield #4

bit-4/2 Spare Bits, Set to 0

bit-1 (FX) Extension Indicator  
 = 0 no extension  
 = 1 extension

**Structure of I004/120 - Subfield #1:****Conflict Nature:****Definition :** Nature of the conflict expressed by a set of properties**Format :** Variable length Data Item comprising a first part of one octet, followed by one-octet extents as necessary.**Structure:** The structure of this Data Item is defined as follows:

Octet no. 1

8	7	6	5	4	3	2	1
MAS	CAS	FLD	FVD	Type	Cross	Div	FX

- bit-8 (MAS) Conflict location in military airspace  
 = 0 conflict not predicted to occur in military airspace  
 = 1 conflict predicted to occur in military airspace
- bit-7 (CAS) Conflict location in civil airspace  
 = 0 conflict not predicted to occur in civil airspace  
 = 1 conflict predicted to occur in civil airspace
- bit-6 (FLD) Fast lateral divergence  
 = 0 Aircraft are not fast diverging laterally at current time  
 = 1 Aircraft are fast diverging laterally at current time
- bit-5 (FVD) Fast vertical divergence  
 = 0 Aircraft are not fast diverging vertically at current time  
 = 1 Aircraft are fast diverging vertically at current time
- bit-4 (Type) Type of separation infringement  
 0 = Minor separation infringement  
 1 = Major separation infringement
- bit-3 (Cross) Crossing test  
 0 = Aircraft have not crossed at starting time of conflict  
 1 = Aircraft have crossed at starting time of conflict
- bit-2 (Div) Divergence test  
 0 = Aircraft are not diverging at starting time of conflict  
 1 = Aircraft are diverging at starting time of conflict
- bit-1 (FX) Field extension indicator  
 0 = No extension  
 1 = Extension

**Structure of I004/120 - Subfield #1 - First Extension:**

Octet no. 2

8	7	6	5	4	3	2	1
RRC	RTC	MRVA	VRAM CRM	VRAM VRM	VRAM VTM	HAM HD	FX

- bit-8 (RRC) Runway/Runway crossing in RIMCAS  
= 0 Default  
= 1 Runway/Runway Crossing
- bit-7 (RTC) Runway/Taxiway Crossing in RIMCAS  
= 0 Default  
= 1 Runway/Taxiway Crossing
- bit-6 (MRVA)  
= 0 Default  
= 1 Msg Type 4 (MSAW) indicates MRVA
- bit-5 (VRAM CRM)  
= 0 Default  
= 1 Msg Type 25 (VRAM) indicates CRM
- bit-4 (VRAM VRM)  
= 0 Default  
= 1 Msg Type 25 (VRAM) indicates VRM
- bit-3 (VRAM VTM)  
= 0 Default  
= 1 Msg Type 25 (VRAM) indicates VTM
- bit-2 (HAM HD)  
= 0 Default  
= 1 Msg Type 29 (HAM) indicates HD
- bit-1 (FX)  
= 0 No extension  
= 1 Extension

**Structure of I004/120 - Subfield #1 - Second Extension:**

Octet no. 3

8	7	6	5	4	3	2	1
HAM RD	HAM VD	DBPSM ARR	DBPSM DEP	DBPSM TL	AIW	0	FX

- bit-8 (HAM RD)  
= 0 Default  
= 1 Msg Type 29 (HAM) indicates RD
- bit-7 (HAM VD)  
=0 Default  
=1 Msg Type 29 (HAM) indicates VD
- bit-6 (DBPSM ARR)  
=0 Default  
=1 Msg Type 20 (DBPSM) indicates ARR
- bit-5 (DBPSM DEP)  
=0 Default  
=1 Msg Type 20 (DBPSM) indicates DEP
- bit-4 (DBPSM TL)  
=0 Default  
=1 Msg Type 20 (DBPSM) indicates above TL
- bit-3 (AIW)  
=0 Default  
=1 Msg Type 99 (AIW) indicates pAIW Alert
- bit-2 Spare bit, set to "0"
- bit-1 (FX)  
= 0 No extension  
= 1 Extension

**Structure of I004/120 - Subfield #2:**

**Conflict Classification**

**Definition :** Severity classification of the conflict

**Format :** One-octet fixed length Data Item

**Structure:**

Octet no. 1							
8	7	6	5	4	3	2	1
Table Id				Conflict Properties			CS

bits-8/5	(Table Id)	Identification of conflict categories definition table
bits-4/2	(Conflict Properties)	Conflict Properties Class
bit-1	(CS)	Conflict Severity = 0 LOW = 1 HIGH

**NOTE -** If no Table Id is defined for a message type, only the value of the CS bit may be of relevance. In that case, for this message type, Table Id and Conflict Properties are meaningless and **shall** be set to "0000" and "000" respectively.

For APW (Message Type = 005), Table Id = 0001 defines the following APW conflict classes:

bits-4/2 (APW)	APW Classifications: = 000 APW Low Severity = 001 APW Medium Severity = 010 APW High Severity
----------------	--

For STCA (Message Type = 007), Table Id = 0000 defines the following conflict classes:

Class	Condition
001	major separation infringement <b>and not</b> (crossed <b>and</b> diverging)
010	minor separation infringement <b>and not</b> (crossed <b>and</b> diverging)
011	major separation infringement <b>and</b> (crossed <b>and</b> diverging)
100	minor separation infringement <b>and</b> (crossed <b>and</b> diverging)

For STCA (Message Type = 007), Table Id = 0001 defines the following filter settings:

bit-4	(LPF)	Linear Prediction Filter = 0 Filter not set = 1 Filter set
bit-3	(CPF)	Current Proximity Filter = 0 Filter not set = 1 Filter set
bit-2	(MHF)	Manoeuvre Hazard Filter = 0 Filter not set = 1 Filter set

For RIMCAS (Message Type = 009 - 016), Table Id = 0010 defines the following alert stages:

bits-4	(RAS)	RIMCAS Alert Stage = 0 Stage One Alert = 1 Stage Two Alert
--------	-------	--

For UTMM (Message Type = 015), Table Id = 0001 defines the following conflict properties:

bits-4/2	(TWY)	Taxiway Conflict Properties: = 000 2 aircraft, same taxiway, opposite direction = 001 aircraft entering wrong direction = 010 aircraft entering wrong taxiway = 011 speed violation
----------	-------	--

For VRAM (Message Type = 024), Table Id = 0001 defines the following VRM conflict classes:

bits-4/2	(VRM)	VRM Conflict Classifications: = 000 VRM Slow Climb = 001 VRM Slow Descent
----------	-------	---

For VRAM (Message Type = 024), Table Id = 0010 defines the following VTM conflict classes:

bits-4/2	(VTM)	VTM Conflict Classifications: = 000 VTM Fast Climb = 001 VTM Fast Descent
----------	-------	---

For DSAM (Message Type = 026), Table Id = 0001 defines the following deviation classifications:

bits-4/2 (DDC)	DSAM Deviation Classifications:
= 000	Vertical manoeuvre deviation prior to reaching its expected level
= 001	Vertical manoeuvre deviation past its expected level

For HAM (Message Type = 027), Table Id = 0001 defines the following RD conflict classes:

bits-4/2 (RD)	RD Conflict Classifications:
= 000	Slow Descent
= 001	Fast Descent
= 010	Slow Climb
= 011	Fast Climb

For HAM (Message Type = 027), Table Id = 0010 defines the following VD conflict classes:

bits-4/2 (VD)	VD Conflict Classifications:
= 000	Above
= 001	Below

For FTD (Message Type = 033), Table Id = 0001 defines the following separation types applied between the two arriving aircraft:

bits-4/2 (ST)	Separation Type (see Note 2 below):
= 000	Table – Single RWY Operation
= 001	MRS – Single RWY Operation
= 010	ROT – Single RWY Operation
= 011	GAP – Single RWY Operation
= 100	Table – Parallel RWY Operation
= 101	MRS – Parallel RWY Operation
= 110	ROT – Parallel RWY Operation
= 111	GAP – Parallel RWY Operation

For ITD (Message Type = 034), Table Id = 0001 defines the following separation types applied between the two arriving aircraft:

bits-4/2 (ST)	Separation Type (see Note 2 below):
= 000	Table – Single RWY Operation
= 001	MRS – Single RWY Operation
= 010	ROT – Single RWY Operation
= 011	GAP – Single RWY Operation
= 100	Table – Parallel RWY Operation
= 101	MRS – Parallel RWY Operation
= 110	ROT – Parallel RWY Operation

= 111      GAP – Parallel RWY Operation

For IIA (Message Type = 035), Table Id = 0001 defines the following values:

bits-4/2 (IT)	Indicator Type
	= 000: End of Alert
	= 001: Planned Alert
	= 010: Alert on TABLE Indicator
	= 011: Alert on MRS Indicator
	= 100: Alert on ROT indicator
	= 101: Alert on GAP Indicator

For CATC (Message Type = 038), Table Id = 0000 (Line-Up Clearance Issued) defines the following conflict properties:

bits-4/2 (Line-Up)	Line-Up Clearance Conflict Properties:
	= 000      Line-Up vs. Line-Up
	= 001      Line-Up vs. Cross or Enter
	= 010      Line-Up vs. Take-Off
	= 011      Line-Up vs. Landing

For CATC (Message Type = 038), Table Id = 0001 (Cross or Enter Clearance Issued) defines the following conflict properties:

bits-4/2 (CoE)	Cross or Enter Clearance Conflict Properties:
	= 000      Cross or Enter vs. Line-Up
	= 001      Cross or Enter vs. Cross or Enter
	= 010      Cross or Enter vs. Take-Off
	= 011      Cross or Enter vs. Landing

For CATC (Message Type = 038), Table Id = 0010 (Take-Off Clearance Issued) defines the following conflict properties:

bits-4/2 (TO)	Take-Off Clearance Conflict Properties:
	= 000      Take-Off vs. Line-Up
	= 001      Take-Off vs. Cross or Enter
	= 010      Take-Off vs. Take-Off
	= 011      Take-Off vs. Landing

For CATC (Message Type = 038), Table Id = 0011 (Landing Clearance Issued) defines the following conflict properties:

bits-4/2 (Land)	Landing Clearance Conflict Properties:
	= 000      Landing vs. Line-Up
	= 001      Landing vs. Cross or Enter
	= 010      Landing vs. Take-Off
	= 011      Landing vs. Landing

For CATC (Message Type = 038), Table Id = 0100 (Push-Back Clearance Issued) defines the following conflict properties:

bits-4/2 (PB)	Push-Back Clearance Conflict Properties:
= 000	Push-Back vs. Push-Back
= 001	Push-Back vs. Taxi

For CATC (Message Type = 038), Table Id = 0101 (Taxi Clearance Issued) defines the following conflict properties:

bits-4/2 (Taxi)	Taxi Clearance Conflict Properties:
= 000	Taxi vs. Push-Back
= 001	Taxi vs. Taxi

For NOCLR (Message Type = 039), Table Id = 0001 defines the following ATC Clearance types:

bits-4/2 (NOCLR)	ATC Clearance missing:
= 000	No Push-Back Clearance
= 001	No Taxi Clearance
= 010	No Line-Up Clearance
= 011	No Crossing Clearance
= 100	No Enter Clearance
= 101	No Take-Off Clearance
= 110	Landing Clearance

For NOMOV (Message Type = 040), Table Id = 0001 defines the following ATC Clearance types after which a target is not moving:

bits-4/2 (NOMOV)	Target not moving despite ATC Clearance:
= 000	After Push-Back Clearance
= 001	After Taxi Clearance
= 010	After Line-Up Clearance
= 011	After Crossing Clearance
= 100	After Enter Clearance
= 101	After Take-Off Clearance
= 110	Stationary on Runway
= 111	Stationary on Taxiway

For NOH (Message Type = 041), Table Id = 0001 defines the following missing handover types:

bits-4/2 (HOT)	Handover Type:
= 000	No contact (receiving ATSU)
= 001	No transfer (leaving ATSU)

For NTZ (Message Type = 045), Table Id = 0001 defines the following filter settings:

bit-4	(LPF)	Linear Prediction Filter = 0 Filter not set = 1 Filter set
bit-3	(SPARE)	Spare Bit, set to 0
bit-2	(MSM)	Mode S Manoeuvre/Prediction Filter = 0 Filter not set = 1 Filter set

**NOTE -**

1. Additional conflict classes may be defined by introducing additional properties of a conflict.
2. For FTD (Message Type = 033), ITD (Message Type = 034) and IIA (Message Type = 035) the following types of separation have been applied:

**Table:** application of the values contained in the separation table according to the different wake vortex categories of the two aircraft.

**MRS:** Minimum Radar Separation for the arrival runway

**ROT:** Runway Occupancy Time – separation to achieve a specific ROT.

**GAP:** separation based on a gap manually input by the ATCO

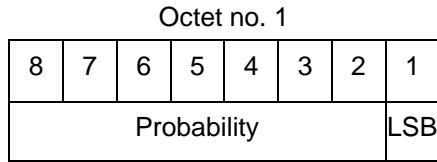
**Structure of I004/120 - Subfield #3:**

**Conflict Probability**

**Definition :** Probability of the conflict

**Format :** One-octet fixed length Data Item

**Structure:**



bits-8/1                      (Probability)    Conflict probability  
 LSB = 0.5%

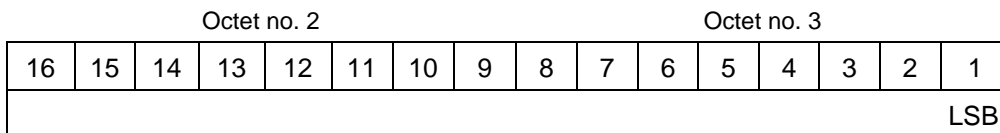
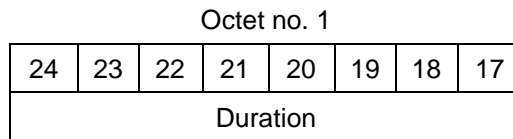
**Structure of I004/120 - Subfield #4:**

**Conflict Duration**

**Definition :** The duration of the conflict is the elapsed time since the declaration of the conflict.

**Format :** Three-octet fixed length Data Item

**Structure:**



bit-24/1 (Duration)                      Conflict duration  
 LSB = 1/128 sec

**6.2.17 Data Item I004/170, Aircraft Identification & Characteristics 1**

**Definition :** Identification & Characteristics of Aircraft 1 Involved in the Conflict.

**Format :** Compound Data Item, comprising a primary subfield of up to two octets, followed by the indicated subfields.

**Structure of  
Primary Subfield:**

Octet no. 1							
16	15	14	13	12	11	10	9
AI1	M31	CPW	CPC	TT1	DT1	AC1	FX

Octet no. 2							
8	7	6	5	4	3	2	1
MS1	FP1	CF1	0	0	0	0	FX

bit-16	(AI1)	Subfield #1: Aircraft Identifier 1 = 0 Absence of Subfield #1 = 1 Presence of Subfield #1
bit-15	(M31)	Subfield #2: Mode 3/A Code Aircraft 1 = 0 Absence of Subfield #2 = 1 Presence of Subfield #2
bit-14	(CPW)	Subfield #3: Predicted Conflict Position 1 (WGS84) = 0 Absence of Subfield #3 = 1 Presence of Subfield #3
bit-13	(CPC)	Subfield #4: Predicted Conflict Position 1 (Cartesian Coordinates) = 0 Absence of Subfield #4 = 1 Presence of Subfield #4
bit-12	(TT1)	Subfield #5: Time to Threshold Aircraft 1 = 0 Absence of Subfield #5 = 1 Presence of Subfield #5
bit-11	(DT1)	Subfield #6: Distance to Threshold Aircraft 1 = 0 Absence of Subfield #6 = 1 Presence of Subfield #6
bit-10	(AC1)	Subfield #7: Aircraft Characteristics Aircraft 1 = 0 Absence of Subfield #7 = 1 Presence of Subfield #7
bit-9	FX	Extension indicator = 0 no extension = 1 extension
bit-8	(MS1)	Subfield #8: Mode S Identifier Aircraft 1 = 0 Absence of Subfield #8 = 1 Presence of Subfield #8

bit-7	(FP1)	Subfield #9: Flight Plan Number Aircraft 1 = 0 Absence of Subfield #9 = 1 Presence of Subfield #9
bit-6	(CF1)	Subfield #10: Cleared Flight Level Aircraft 1 = 0 Absence of Subfield #10 = 1 Presence of Subfield #10
bits-5/2		Spare Bits, set to 0
bit-1	FX	Extension indicator = 0 no extension = 1 extension

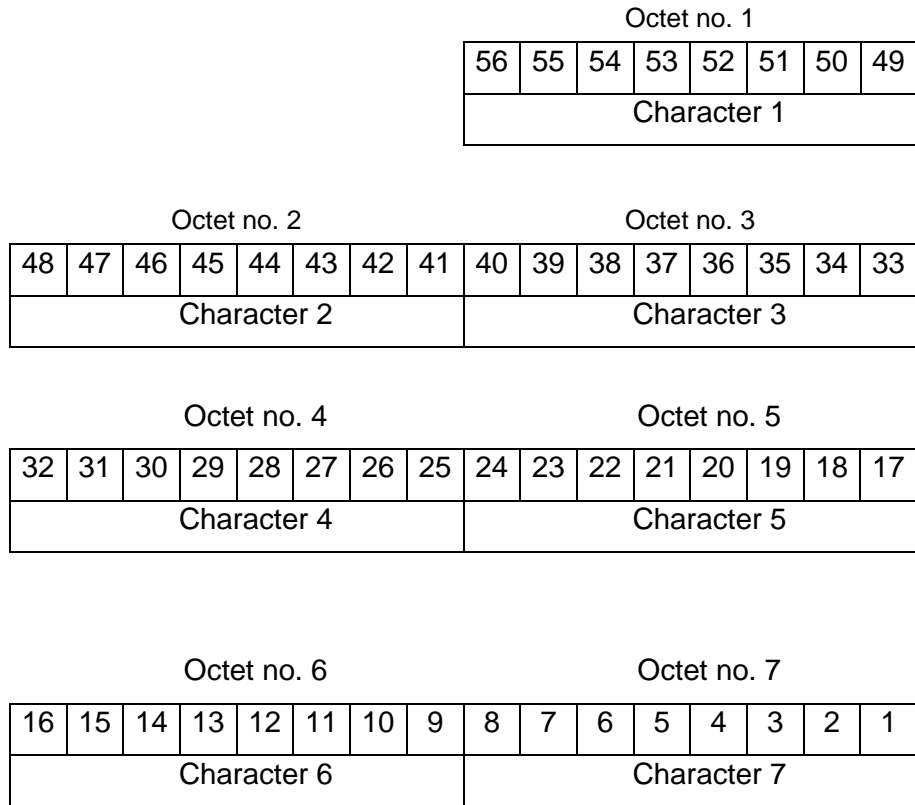
**Structure of I004/170 - Subfield # 1:**

**Aircraft Identifier 1**

**Definition:** Aircraft Identifier (in 7 characters) of Aircraft 1 Involved in the Conflict

**Format:** Seven-octet fixed length Data Item.

**Structure:**



bits-56/1

Each octet is an ASCII character defining the first aircraft

**NOTE -**

1. The aircraft identifier is always left adjusted. If needed, the remaining characters are filled with space character.
2. For Message Type = 33 (Final Target Distance Indicator - FTD) this contains the aircraft identifier of the following aircraft.
3. For Message Type = 34 (Initial Target Distance Indicator - ITD) this contains the aircraft identifier of the following aircraft.
4. For Message Type = 35 (Wake Vortex Indicator Infringement Alert - IIA) this contains the aircraft identifier of the following aircraft.
5. For Message Type = 37 (Catch-Up Warning - CUW) this contains the aircraft identifier of the following aircraft (i.e. the one catching up).

**Structure of I004/170 - Subfield # 2:****Mode 3/A Code Aircraft 1**

**Definition :** Mode-3/A code (converted into octal representation) of Aircraft 1  
Involved in the Conflict

**Format :** Two-octet fixed length Data Item.

**Structure:**

Octet no. 1								Octet no. 2							
16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
0	0	0	0	A4	A2	A1	B4	B2	B1	C4	C2	C1	D4	D2	D1

bits-16/13

bits-12/1

Spare bits set to 0

Mode-3/A reply in octal  
representation**NOTE -**

1. For Message Type = 33 (Final Target Distance Indicator - FTD) this contains the Mode 3/A Code of the following aircraft.
2. For Message Type = 34 (Initial Target Distance Indicator - ITD) this contains the Mode 3/A Code of the following aircraft.
3. For Message Type = 35 (Wake Vortex Indicator Infringement Alert - IIA) this contains the Mode 3/A Code of the following aircraft.
4. For Message Type = 37 (Catch-Up Warning - CUW) this contains the Mode 3/A code of the following aircraft (i.e. the one catching up).

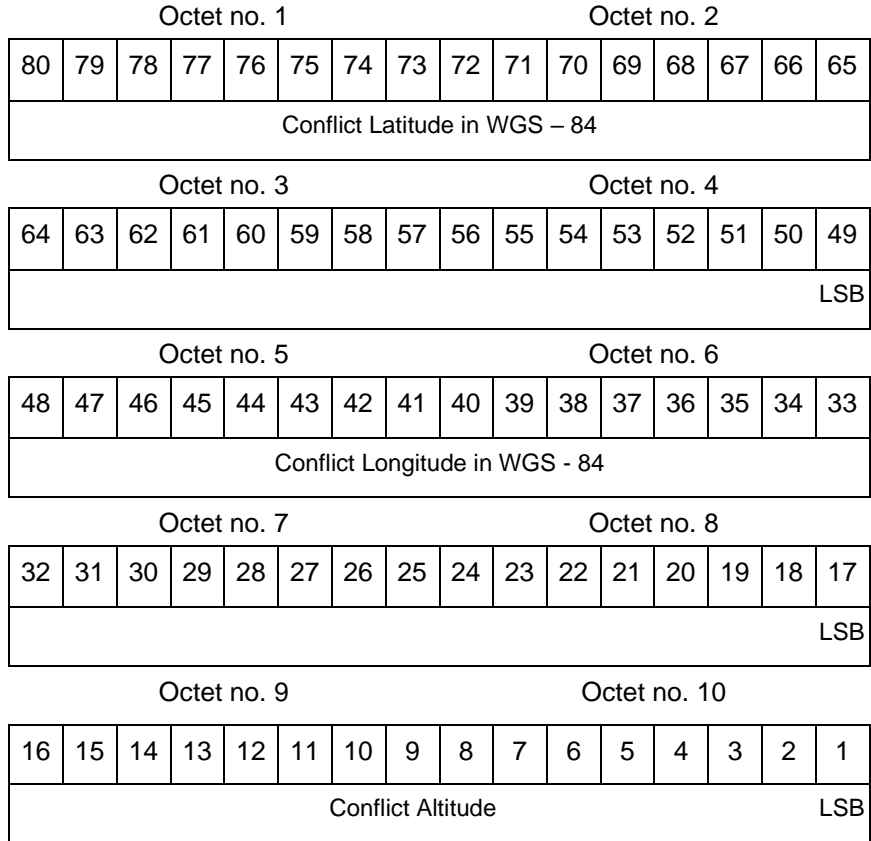
**Structure of I004/170 - Subfield # 3:**

**Predicted Conflict Position Aircraft 1 / Separation Indicator (WGS-84)**

**Definition :** Predicted conflict position target 1 in WGS-84 Coordinates.

**Format :** Ten-octet fixed length Data Item

**Structure:**



bits-80/49	(Latitude)	In WGS-84 in two’s complement. Range -90 <= latitude <= 90 deg.
	(LSB)	= 180/2 <sup>25</sup> degrees

bits-48/17	(Longitude)	In WGS-84 in two’s complement. Range -180 <= longitude < 180 deg.
	(LSB)	= 180/2 <sup>25</sup> degrees

The LSB provides a resolution better than 0.6m.

bits-16/1	(Altitude)	Altitude of predicted conflict
	(LSB)	= 25ft
	Hmin	= -1500 ft
	Hmax	= 150000 ft
		See Note below

**NOTE -**

1. Altitude expressed in two's complement.
2. For Message Type = 33 (Final Target Distance Indicator - FTD) this data item contains the position (in WGS-84) of the Separation Indicator presented to the ATCO. In this case bits 16/1 are meaningless.
3. For Message Type = 34 (Initial Target Distance Indicator - ITD) this data item contains the position (in WGS-84) of the Separation Indicator presented to the ATCO. In this case bits 16/1 are meaningless.
4. For Message Type = 35 (Wake Vortex Indicator Infringement Alert - IIA) this data item contains the position (in WGS-84) of the Separation Indicator presented to the ATCO. In this case bits 16/1 are meaningless.
5. For Message Type = 37 (Catch-Up Warning - CUW) this contains the position (in WGS-84) of the Separation Indicator presented to the ATCO. In this case bits 16/1 are meaningless.

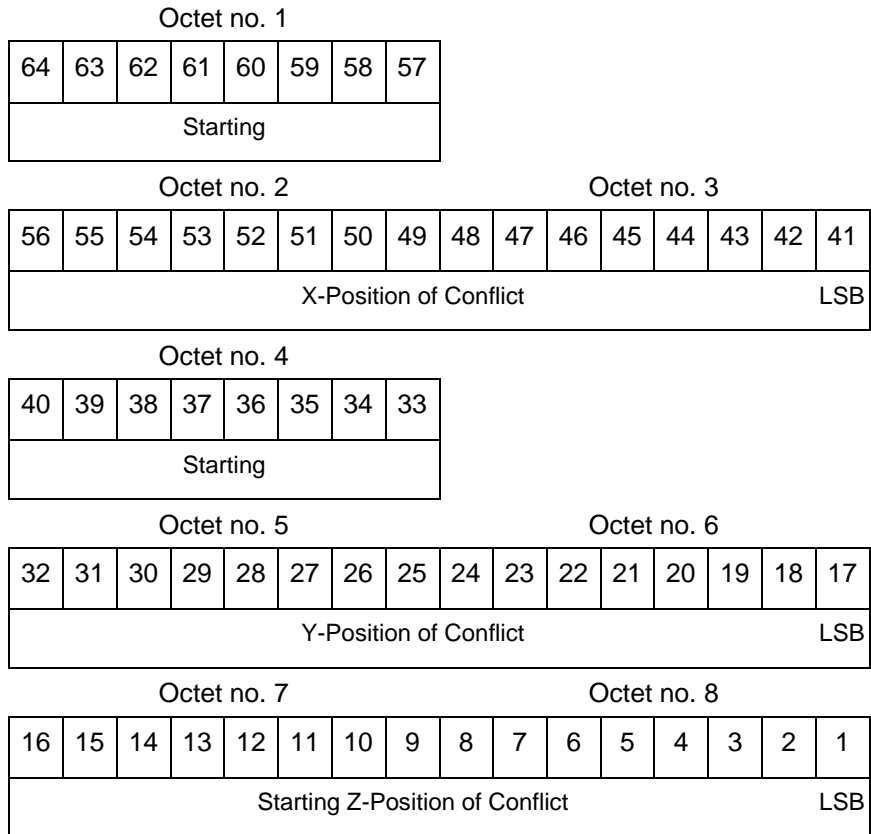
**Structure of I004/170 - Subfield # 4:**

**Predicted Conflict Position Aircraft 1 / Separation Indicator in Cartesian Coordinates**

**Definition :** Predicted conflict position for the aircraft 1 involved in the conflict

**Format :** Eight-octet fixed length Data Item

**Structure:**



- bit-48/33 (X-position) Starting X-position of the conflict  
LSB = 0.5m
- bit-32/17 (Y-position) Starting Y-position of the conflict  
LSB = 0.5m
- bit-16/1 (Z-position) Starting Z-position of the conflict  
LSB = 25 ft  
Hmin = -1500 ft  
Hmax = 150000 ft  
See Note below

**NOTE -**

1. Two's complement fixed-point format.
2. For Message Type = 33 (Final Target Distance Indicator - FTD) this data item contains the position (in Cartesian Coordinates) of the Separation Indicator presented to the ATCO. In this case bits 16/1 are meaningless.
3. For Message Type = 34 (Initial Target Distance Indicator - ITD) this data item contains the position (in Cartesian Coordinates) of the Separation Indicator presented to the ATCO. In this case bits 16/1 are meaningless.
4. For Message Type = 35 (Wake Vortex Indicator Infringement Alert - IIA) this data item contains the position (in Cartesian Coordinates) of the Separation Indicator presented to the ATCO. In this case bits 16/1 are meaningless.
5. For Message Type = 37 (Catch-Up Warning - CUW) this data item contains the position (in Cartesian Coordinates) of the Separation Indicator presented to the ATCO. In this case bits 16/1 are meaningless.

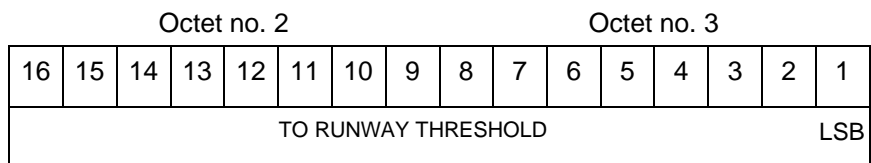
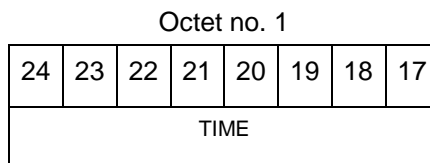
**Structure of I004/170 - Subfield # 5:**

**Time to Threshold Aircraft 1 / Spacing Gap**

**Definition :** Time to runway threshold for first approaching aircraft in a RIMCA

**Format :** Three-octet fixed length Data Item.

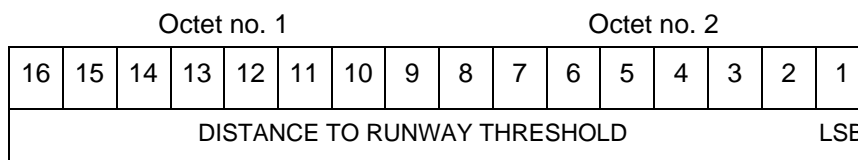
**Structure:**



$$\text{bit-1 (LSB)} = (2^{-7}) \text{ sec} = 1/128 \text{ sec}$$

**NOTE -**

1. Time to Threshold expressed in Two's Complement
2. For Message Type = 33 (Final Target Distance Indicator - FTD) and for Message Type = 34 (Initial Target Distance Indicator - FTD) this data item contains the additional gap in spacing between two approaching aircraft as manually inserted by the ATCO. This could be used, for example, to increase the spacing between approaching aircraft in order to generate sufficient spacing to clear a departing aircraft.

**Structure of I004/170 - Subfield # 6:****Distance to Threshold Aircraft 1****Definition :** Distance to Runway threshold for Aircraft 1 involved in a RIMCA.**Format :** Two-octet fixed length Data Item.**Structure:**

bits 16/1

(Distance to Runway Threshold)

LSB = 0.5m

**Structure of I004/170 - Subfield #7:****Aircraft Characteristics Aircraft 1****Definition :** Characteristics of Aircraft 1 involved in the Conflict**Format :** Variable length Data Item comprising a first part of one octet, followed by one-octet extents as necessary.**Structure of First Part:**

Octet no. 1

8	7	6	5	4	3	2	1
GAT/OAT		FR1/FR2		RVSM		HPR	FX

bits 8/7	(GAT/OAT)	= 00 Unknown = 01 General Air Traffic = 10 Operational Air Traffic = 11 Not applicable
bits 6/5	(FR1/FR2)	= 00 Instrument Flight Rules = 01 Visual Flight rules = 10 Not applicable = 11 Controlled Visual Flight Rules
bits 4/3	(RVSM)	= 00 Unknown = 01 Approved = 10 Exempt = 11 Not Approved
bit 2	(HPR)	= 0 Normal Priority Flight = 1 High Priority Flight
bit-1	(FX)	= 0 End of Data Item = 1 Extension into first extent

**Structure of First Extent:**

Octet no. 1

8	7	6	5	4	3	2	1
CDM		PRI	GV	0	0	0	FX

bit-8/7	(CDM)	Climbing/Descending mode = 00 Maintaining = 01 Climbing = 10 Descending = 11 Invalid
bit 6	(PRI)	= 0 Non primary target = 1 Primary target
bit 5	(GV)	= 0 Default = 1 Ground Vehicle
bits-4/2	spare bits set to zero	
bit-1	(FX)	= 0 End of Data Item = 1 Extension into second extent

**NOTE -**

1. For Message Type = 33 (Final Target Distance Indicator - FTD) this contains the Aircraft Characteristics of the following aircraft.
2. For Message Type = 34 (Initial Target Distance Indicator - FTD) this contains the Aircraft Characteristics of the following aircraft.
3. For Message Type = 35 (Wake Vortex Indicator Infringement Alert - IIA) this contains the Aircraft Characteristics of the following aircraft.
4. For Message Type = 37 (Catch-Up Warning - CUW) this contains the Aircraft Characteristics of the following aircraft.

**Structure of I004/170 - Subfield # 8:**

**Mode-S Identifier Aircraft 1**

**Definition:** Aircraft Identification downloaded from Aircraft 1 involved in the Conflict if equipped with a Mode-S transponder.

**Format:** Six-octet fixed length Data Item.

**Structure:**

Octet no. 1						Octet no. 2									
48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
Character 1						Character 2						Character 3/1			

Octet no. 3						Octet no. 4									
32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
Char 3/2		Character 4						Character 5						Char 6/1	

Octet no. 5						Octet no. 6									
16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Character 6/2				Character 7						Character 8					

bits 48/1                      Characters 1-8 (coded on 6 bits each) defining aircraft identification when a flight plan is available or the registration marking when no flight plan is available. Coding rules are provided in [3] Section 3.1.2.9

**NOTE -**

1. For Message Type = 33 (Final Target Distance Indicator - FTD) this contains the Mode-S Identifier of the following aircraft.
2. For Message Type = 34 (Initial Target Distance Indicator - ITD) this contains the Mode-S Identifier of the following aircraft.
3. For Message Type = 35 (Wake Vortex Indicator Infringement Alert - IIA) this contains the Mode-S Identifier of the following aircraft.
4. For Message Type = 37 (Catch-Up Warning - CUW) this contains the Mode-S Identifier of the following aircraft.

**Structure of I004/170 - Subfield # 9:**

**Flight Plan Number Aircraft 1**

**Definition:** Number of the Flight Plan Correlated to Aircraft 1 Involved in the Conflict

**Format:** Four-octet fixed length Data Item.

**Structure:**

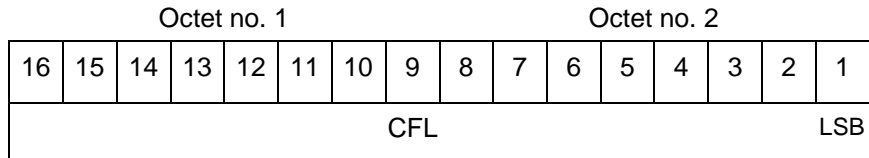
Octet no. 1								Octet no. 2							
32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
0	0	0	0	0	NBR										

Octet no. 3								Octet no. 4							
16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
LSB															

bits-32/28                      spare bits set to zero  
 bits-27/1                      (NBR)                      Number from 0 to 99 999 999

**NOTE -**

1. For Message Type = 33 (Final Target Distance Indicator - FTD) this contains the Flight Plan Number of the following aircraft.
2. For Message Type = 34 (Initial Target Distance Indicator - ITD) this contains the Flight Plan Number of the following aircraft.
3. For Message Type = 35 (Wake Vortex Indicator Infringement Alert - IIA) this contains the Flight Plan Number of the following aircraft.
4. For Message Type = 37 (Catch-Up Warning - CUW) this contains the Flight Plan Number of the following aircraft.

**Structure of I004/170 - Subfield # 10:****Cleared Flight Level Aircraft 1****Definition :** Cleared Flight Level for Aircraft 1 Involved in the Conflict**Format :** Two-octet fixed length Data Item, two's complement.**Structure:**

bits 16/1                      (CFL)                      Cleared Flight Level  
 LSB = ¼ FL

The value shall be within the range described by ICAO Annex 10

**NOTE -**

1. For Message Type = 33 (Final Target Distance Indicator - FTD) this contains the Cleared Flight Level of the following aircraft.
2. For Message Type = 34 (Initial Target Distance Indicator - ITD) this contains the Cleared Flight Level of the following aircraft.
3. For Message Type = 35 (Wake Vortex Indicator Infringement Alert - IIA) this contains the Cleared Flight Level of the following aircraft.
4. For Message Type = 37 (Catch-Up Warning - CUW) this contains the Cleared Flight Level of the following aircraft.

**6.2.18 Data Item I004/171, Aircraft Identification & Characteristics 2**

**Definition :** Identification & Characteristics of Aircraft 2 Involved in the Conflict.

**Format :** Compound Data Item, comprising a primary subfield of up to two octets, followed by the indicated subfields.

**Structure of Primary Subfield:**

Octet no. 1

16	15	14	13	12	11	10	9
AI2	M32	CPW	CPC	TT2	DT2	AC2	FX

Octet no. 2

8	7	6	5	4	3	2	1
MS2	FP2	CF2	0	0	0	0	FX

bit-16	(AI2)	Subfield #1: Aircraft Identifier 2 = 0 Absence of Subfield #1 = 1 Presence of Subfield #1
bit-15	(M32)	Subfield #2: Mode 3/A Code Aircraft 2 = 0 Absence of Subfield #2 = 1 Presence of Subfield #2
bit-14	(CPW)	Subfield #3: Predicted Conflict Position 2 (WGS84) = 0 Absence of Subfield #3 = 1 Presence of Subfield #3
bit-13	(CPL)	Subfield #4: Predicted Conflict Position 2 (Cartesian Coordinates) = 0 Absence of Subfield #4 = 1 Presence of Subfield #4
bit-12	(TT2)	Subfield #5: Time to Threshold Aircraft 2 = 0 Absence of Subfield #5 = 1 Presence of Subfield #5
bit-11	(DT2)	Subfield #6: Distance to Threshold Aircraft 2 = 0 Absence of Subfield #6 = 1 Presence of Subfield #6
bit-10	(AC2)	Subfield #7: Aircraft Characteristics Aircraft 2 = 0 Absence of Subfield #7 = 1 Presence of Subfield #7
bit-9	FX	Extension indicator = 0 no extension = 1 extension
bit-8	(MS2)	Subfield #8: Mode S Identifier Aircraft 2 = 0 Absence of Subfield #8 = 1 Presence of Subfield #8

bit-7	(FP2)	Subfield #9: Flight Plan Number Aircraft 2 = 0 Absence of Subfield #9 = 1 Presence of Subfield #9
bit-6	(CF2)	Subfield #10: Cleared Flight Level Aircraft 2 = 0 Absence of Subfield #10 = 1 Presence of Subfield #10
bits-5/2		Spare Bits, set to 0
bit-1	FX	Extension indicator = 0 no extension = 1 extension

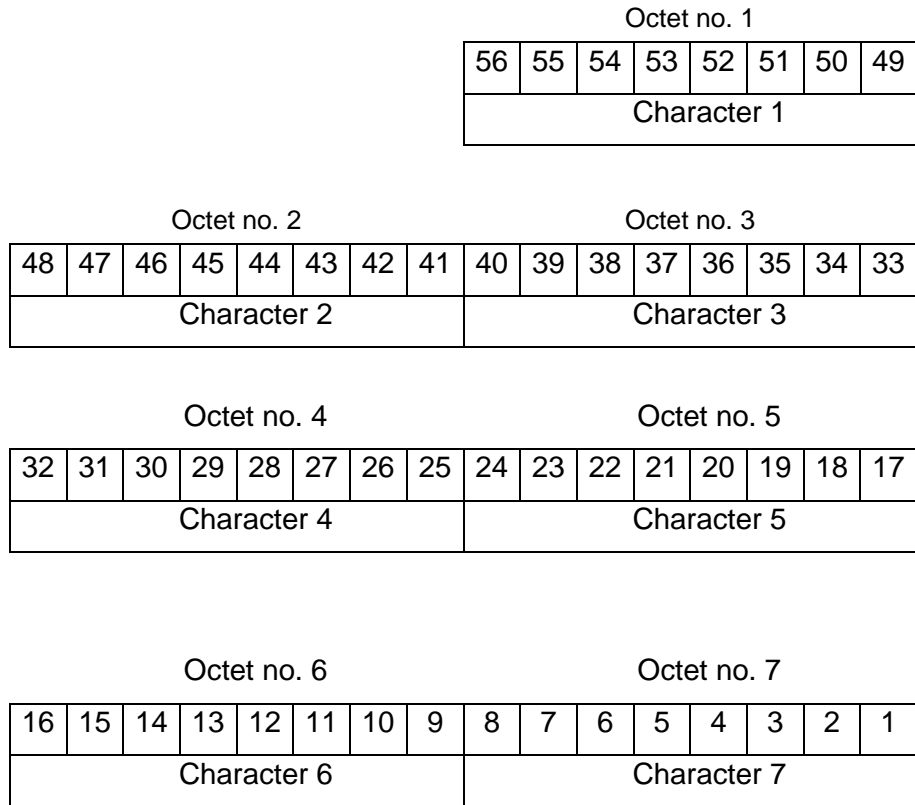
**Structure of I004/171 - Subfield # 1:**

**Aircraft Identifier 2**

**Definition:** Aircraft Identifier (in 7 characters) of Aircraft 2 Involved in the Conflict

**Format:** Seven-octet fixed length Data Item.

**Structure:**



bits-56/1

Each octet is an ASCII character defining the second aircraft

**NOTE -**

1. The aircraft identifier is always left adjusted. If needed, the remaining characters are filled with space character.
2. For Message Type = 33 (Final Target Distance Indicator - FTD) this contains the aircraft identifier of the leading aircraft.
3. For Message Type = 34 (Initial Target Distance Indicator - ITD) this contains the aircraft identifier of the leading aircraft.
4. For Message Type = 35 (Wake Vortex Indicator Infringement Alert - IIA) this contains the aircraft identifier of the leading aircraft.
5. For Message Type = 37 (Catch-Up Warning - CUW) this contains the aircraft identifier of the leading aircraft.

**Structure of I004/171 - Subfield # 2:****Mode 3/A Code Aircraft 2**

**Definition :** Mode-3/A code (converted into octal representation) of Aircraft 2  
Involved in the Conflict

**Format :** Two-octet fixed length Data Item.

**Structure:**

Octet no. 1								Octet no. 2							
16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
0	0	0	0	A4	A2	A1	B4	B2	B1	C4	C2	C1	D4	D2	D1

bits-16/13

bits-12/1

Spare bits set to 0

Mode-3/A reply in octal  
representation**NOTE -**

1. For Message Type = 33 (Final Target Distance Indicator - FTD) this contains the Mode 3/A Code of the leading aircraft.
2. For Message Type = 34 (Initial Target Distance Indicator - ITD) this contains the Mode 3/A Code of the leading aircraft.
3. For Message Type = 35 (Wake Vortex Indicator Infringement Alert - IIA) this contains the Mode 3/A Code of the leading aircraft.
4. For Message Type = 37 (Catch-Up Warning - CUW) this contains the Mode 3/A code of the leading aircraft.



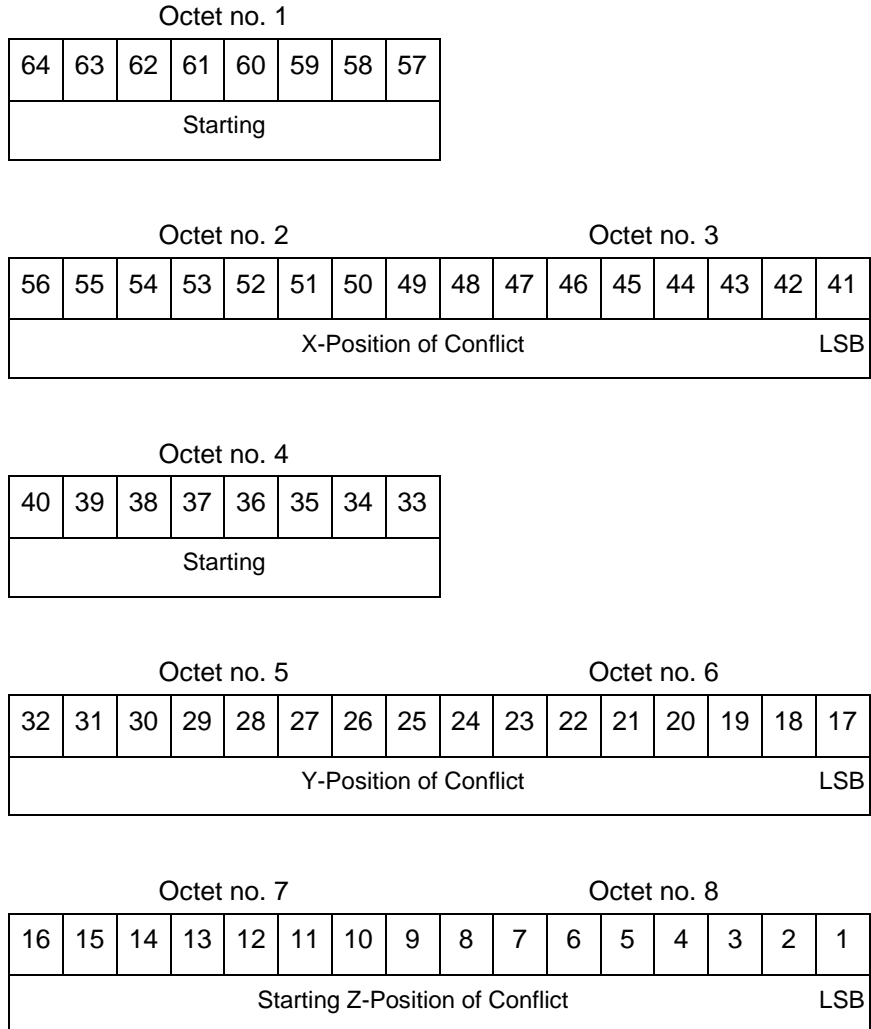
**Structure of I004/171 - Subfield # 4:**

**Predicted Conflict Position Aircraft 2 in Cartesian Coordinates**

**Definition :** Predicted conflict position for the aircraft 2 involved in the conflict

**Format :** Eight-octet fixed length Data Item

**Structure:**



- bit-48/33 (X-position) Starting X-position of the conflict  
LSB = 0.5m
- bit-32/17 (Y-position) Starting Y-position of the conflict  
LSB = 0.5m
- bit-16/1 (Z-position) Starting Z-position of the conflict  
LSB = 25 ft  
Hmin = -1500 ft  
Hmax = 150000 ft

**NOTE -**

1. Two's complement.

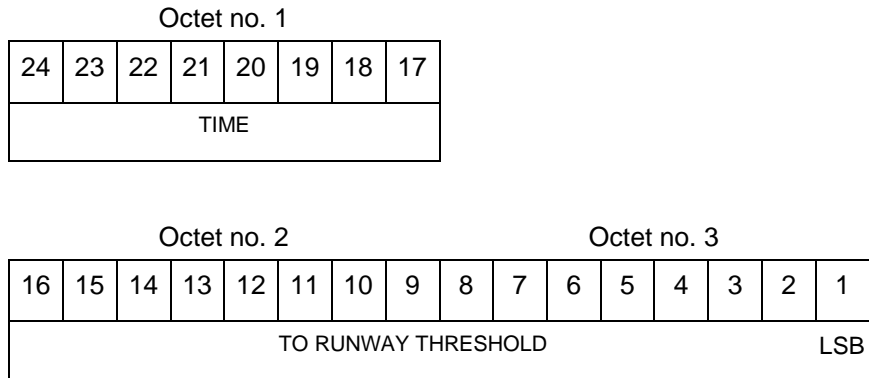
**Structure of I004/171 - Subfield # 5:**

**Time to Threshold Aircraft 2**

**Definition :** Time to Runway threshold for second approaching aircraft in a RIMCA

**Format :** Three-octet fixed length Data Item.

**Structure:**



bit-1 (LSB) =  $(2^{-7})$  sec = 1/128 sec

**NOTE -** Time to Threshold expressed in Two's Complement

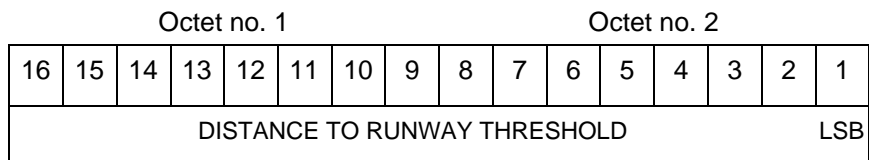
**Structure of I004/171 - Subfield # 6:**

**Distance to Threshold Aircraft 2**

**Definition :** Distance to Runway threshold for Aircraft 2 involved in a RIMCA.

**Format :** Two-octet fixed length Data Item.

**Structure:**



bits 16/1 (Distance to Runway Threshold)  
LSB = 0.5m

**Structure of I004/171 - Subfield #7:****Aircraft Characteristics Aircraft 2****Definition :** Characteristics of Aircraft 2 involved in the Conflict**Format :** Variable length Data Item comprising a first part of one octet, followed by one-octet extents as necessary.**Structure of First Part:**

Octet no. 1

8	7	6	5	4	3	2	1
GAT/OAT		FR1/FR2		RVSM		HPR	FX

bits 8/7	(GAT/OAT)	= 00	Unknown
		= 01	General Air Traffic
		= 10	Operational Air Traffic
		= 11	Not applicable
bits 6/5	(FR1/FR2)	= 00	Instrument Flight Rules
		= 01	Visual Flight rules
		= 10	Not applicable
		= 11	Controlled Visual Flight Rules
bits 4/3	(RVSM)	= 00	Unknown
		= 01	Approved
		= 10	Exempt
		= 11	Not Approved
bit 2	(HPR)	= 0	Normal Priority Flight
		= 1	High Priority Flight
bit-1	(FX)	= 0	End of Data Item
		= 1	Extension into first extent

**Structure of First Extent:**

Octet no. 1

8	7	6	5	4	3	2	1
CDM		PRI	GV	0	0	0	FX

bit-8/7	(CDM)	Climbing/Descending mode = 00 Maintaining = 01 Climbing = 10 Descending = 11 Invalid
bit 6	(PRI)	= 0 Non primary target = 1 Primary target
bit 5	(GV)	= 0 Default = 1 Ground Vehicle
bits-4/2	spare bits set to zero	
bit-1	(FX)	= 0 End of Data Item = 1 Extension into second extent

**NOTE -**

1. For Message Type = 33 (Final Target Distance Indicator - FTD) this contains the Aircraft Characteristics of the leading aircraft.
2. For Message Type = 34 (Initial Target Distance Indicator - ITD) this contains the Aircraft Characteristics of the leading aircraft.
3. For Message Type = 35 (Wake Vortex Indicator Infringement Alert - IIA) this contains the Aircraft Characteristics of the leading aircraft.
4. For Message Type = 37 (Catch-Up Warning - CUW) this contains the Aircraft Characteristics of the leading aircraft.

**Structure of I004/171 - Subfield # 8:**

**Mode-S Identifier Aircraft 2**

**Definition:** Aircraft Identification downloaded from Aircraft 2 involved in the Conflict if equipped with a Mode-S transponder.

**Format:** Six-octet fixed length Data Item.

**Structure:**

Octet no. 1						Octet no. 2									
48	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33
Character 1						Character 2						Character 3/1			

Octet no. 3						Octet no. 4									
32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
Char 3/2		Character 4						Character 5						Char 6/1	

Octet no. 5						Octet no. 6									
16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Character 6/2				Character 7						Character 8					

bits 48/1 Characters 1-8 (coded on 6 bits each) defining aircraft identification when a flight plan is available or the registration marking when no flight plan is available. Coding rules are provided in [3] Section 3.1.2.9

**NOTE -**

1. For Message Type = 33 (Final Target Distance Indicator - FTD) this contains the Mode-S Identifier of the leading aircraft.
2. For Message Type = 34 (Initial Target Distance Indicator - ITD) this contains the Mode-S Identifier of the leading aircraft.
3. For Message Type = 35 (Wake Vortex Indicator Infringement Alert - IIA) this contains the Mode-S Identifier of the leading aircraft.
4. For Message Type = 37 (Catch-Up Warning - CUW) this contains the Mode-S Identifier of the leading aircraft.

**Structure of I004/171 - Subfield # 9:**

**Flight Plan Number Aircraft 2**

**Definition:** Number of the Flight Plan Correlated to Aircraft 2 Involved in the Conflict

**Format:** Four-octet fixed length Data Item.

**Structure:**

Octet no. 1								Octet no. 2							
32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
0	0	0	0	0	NBR										

Octet no. 3								Octet no. 4							
16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
LSB															

bits-32/28                      spare bits set to zero  
 bits-27/1                      (NBR)                      Number from 0 to 99 999 999

**NOTE -**

1. For Message Type = 33 (Final Target Distance Indicator - FTD) this contains the Flight Plan Number of the leading aircraft.
2. For Message Type = 34 (Initial Target Distance Indicator - ITD) this contains the Flight Plan Number of the leading aircraft.
3. For Message Type = 35 (Wake Vortex Indicator Infringement Alert - IIA) this contains the Flight Plan Number of the leading aircraft.
4. For Message Type = 37 (Catch-Up Warning - CUW) this contains the Flight Plan Number of the leading aircraft.

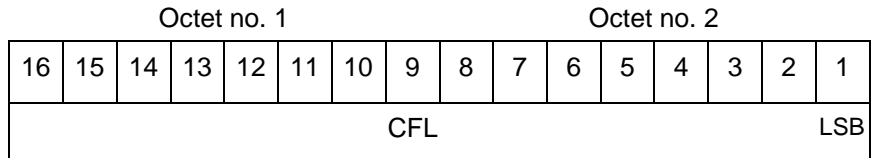
**Structure of I004/171 - Subfield # 10:**

**Cleared Flight Level Aircraft 2**

**Definition :** Cleared Flight Level for Aircraft 2 Involved in the Conflict

**Format :** Two-octet fixed length Data Item, two's complement.

**Structure:**



bits 16/1                      (CFL)                      Cleared Flight Level  
 LSB = ¼ FL

**NOTE -**

1. The value shall be within the range described by ICAO Annex 10
2. For Message Type = 33 (Final Target Distance Indicator - FTD) this contains the Cleared Flight Level of the leading aircraft.
3. For Message Type = 34 (Initial Target Distance Indicator - ITD) this contains the Cleared Flight Level of the leading aircraft.
4. For Message Type = 35 (Wake Vortex Indicator Infringement Alert - IIA) this contains the Cleared Flight Level of the leading aircraft.
5. For Message Type = 37 (Catch-Up Warning - CUW) this contains the Cleared Flight Level of the leading aircraft.

### 6.3 User Application Profile for Category 004

The following User Application Profile shall be used for the transmission of Safety Nets messages.

FRN	Data Item	Information	Length
1	I004/010	Data Source Identifier	2
2	I004/000	Message Type	1
3	I004/015	SDPS Identifier	1+
4	I004/020	Time Of Message	3
5	I004/040	Alert Identifier	2
6	I004/045	Alert Status	1
7	I004/060	Safety Net Function & System Status	1+
FX	-	Field Extension Indicator	-
8	I004/030	Track Number 1	2
9	I004/170	Aircraft Identification & Characteristics 1	1+
10	I004/120	Conflict Characteristics	1+
11	I004/070	Conflict Timing and Separation	1+
12	I004/076	Vertical Deviation	2
13	I004/074	Longitudinal Deviation	2
14	I004/075	Transversal Distance Deviation	3
FX	-	Field Extension Indicator	-
15	I004/100	Area Definitions	1+
16	I004/035	Track Number 2	2
17	I004/171	Aircraft Identification & Characteristics 2	1+
18	I004/110	FDPS Sector Control Identifier	1+
19	-	Spare	-
20	RE	Reserved Expansion Field	1+
21	SP	Reserved For Special Purpose Field	1+
FX	-	Field Extension Indicator	-

**Table 7 : Safety Net Messages UAP**

In the above table

- the first column indicates the Field Reference Number (FRN) associated to each Data Item used in the UAP;
- the fourth column gives the format and the length of each item, a stand-alone figure indicates the octet-count of a fixed-length Data Item, 1+ indicates a variable-length Data Item comprising a first part of 1 octet followed by n-octets extents as necessary.



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