EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION

EUROCONTROL

ASTERIX Part 14 Category 020 Appendix A Coding rules for "Reserved Expansion Field"

SUR.ET1.ST05.2000-STD-14-02

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EUROPEAN AIR TRAFFIC MANAGEMENT

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DOCUMENT APPROVAL

The following table identifies all management authorities who have successively approved the present issue of this document.

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DOCUMENT CHANGE RECORD

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

EDITION	DATE	REASON FOR CHANGE	SECTIONS PAGES AFFECTED
1.0	April 2008	Creation	All
1.1	May 2008	Modification in Item PA, Subfield #3: Length 1 => 2 bytes, resolution (LSB) 1 ft	2.3

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EXECUTIVE SUMMARY

1. INTRODUCTION

1.1 Scope

This document describes the way to encode information in the Reserved Expansion Field of ASTERIX Cat 020 (Multilateration Target Reports).

2. DESCRIPTION OF THE CONTENT OF RESERVED EXPANSION FIELD

2.1 Length Indicator

Definition : This field indicates the total length in octets of the Reserved Expansion Field (including the REF length indicator itself)

Format : One-octet fixed length Data Item

Structure:

Octet no. 1

8	7	6	5	4	3	2	1
LEN							

bits 8-1 (LEN) Length of REF in octets, including the Length Indicator itself.

Encoding Rule :

This item shall be present in every REF

2.2 Items indicator

Definition : This field indicates what are the items encoded in the REF

Format : One-octet fixed length Data Item

Structure:

Octet no. 1

8	7	6	5	4	3	2	1
PA	0	0	0	0	0	0	0

bit 8 (PA) = 0 Position Accuracy is not present in the REF

= 1 Position Accuracy is present in the REF

bits 7/1 Spare bits set to 0

Encoding Rule :

This item shall be present in every REF

2.3 PA

Definition: Standard Deviation of Position

Format: Compound Data Item, comprising a primary subfield of one octet, followed by one or more defined subfields.

Structure of Primary Subfield:

Octet no. 1

8	7	6	5	4	3	2	1
DOP	SDC	SDH	SDW	0	0	0	0

bit-8 (DOP) Subfield #1: DOP of Position

= 0 Absence of Subfield #1

= 1 Presence of Subfield #1

bit-7 (SDC) Subfield #2: Standard Deviation of Position (Cartesian)

= 0 Absence of Subfield #2

= 1 Presence of Subfield #2

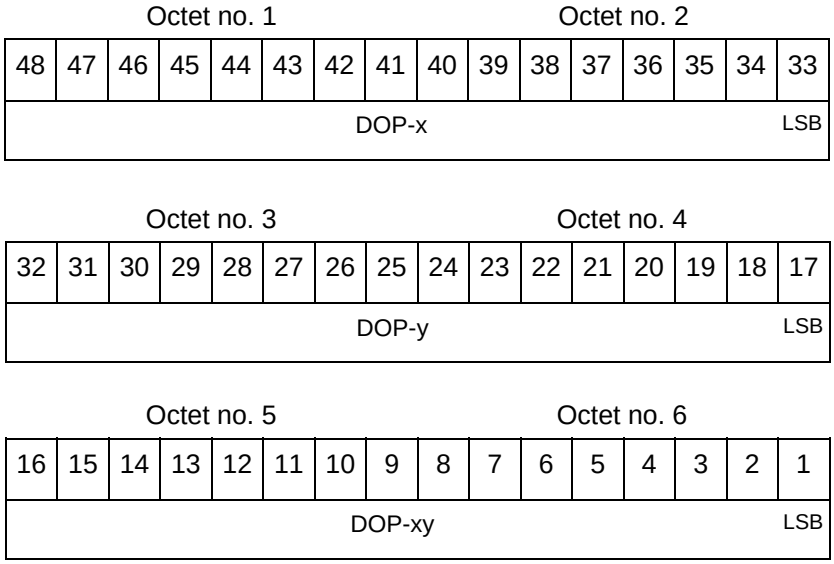
bit-6 (SDH) Subfield #3: Standard Deviation of Geometric Height

=0 Absence of Subfield #3

		=1	Presence of Subfield #3
bit-5	(SDW)		Subfield #4: Standard Deviation of Position (WGS-84)
		= 0	Absence of Subfield #4
		= 1	Presence of Subfield #4
bits-4/1	(Spare)		Subfields #5/8: Spare
		= 0	Absence of Subfield
		= 1	Presence of Subfield

Structure of Subfield # 1:

DOP of Position



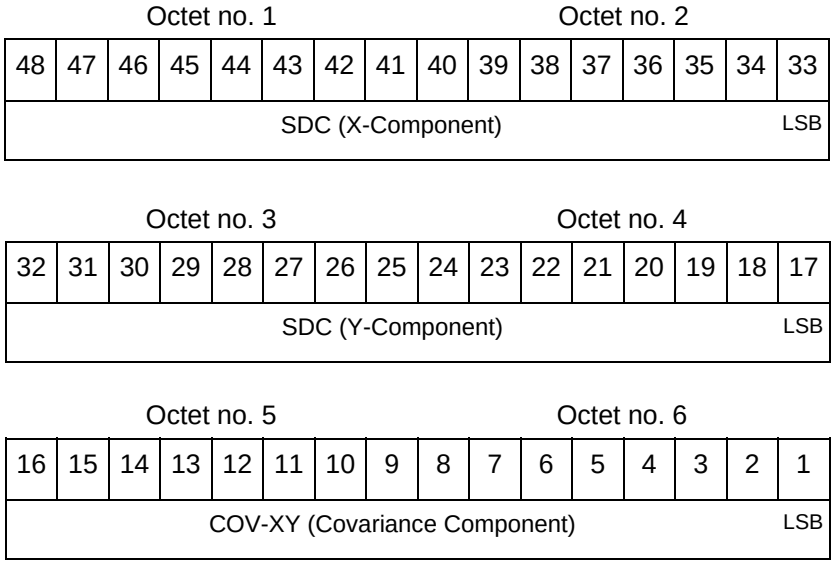
bits-48/33	(DOP-x)	DOP along x axis LSB= 0.25
bits-32/17	(DOP-y)	DOP along y axis LSB= 0.25
bits-16/1	(DOP-xy)	DOP Covariance Component in two's complement form LSB= 0.25 Maximum value = 8.191

Notes:

1. DOP Covariance Component (DOP-xy) = sign {HDOPxy} * sqrt {abs (HDOPxy)}
2. "Maximum value" means Maximum value or above.

Structure of Subfield # 2:

Standard Deviation of Position (Cartesian)



bits-48/17 (SDC) Standard Deviation of Position of the target expressed in Cartesian coordinates

LSB= 0.25 m

bits 16/1 (COV-XY) XY Covariance Component in two's complement form

LSB= 0.25m

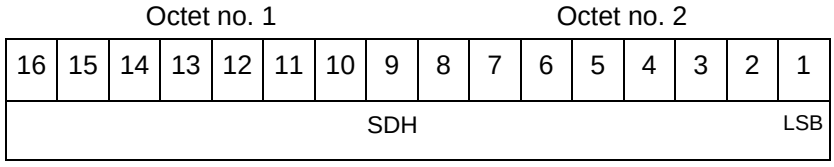
Maximum value = 8.191km

Notes:

1. XY covariance component = sign {Cov(X,Y)} * sqrt {abs [Cov (X,Y)]}
2. "Maximum value" means Maximum value or above.

Structure of Subfield # 3:

Standard Deviation of Geometric Height (WGS-84)

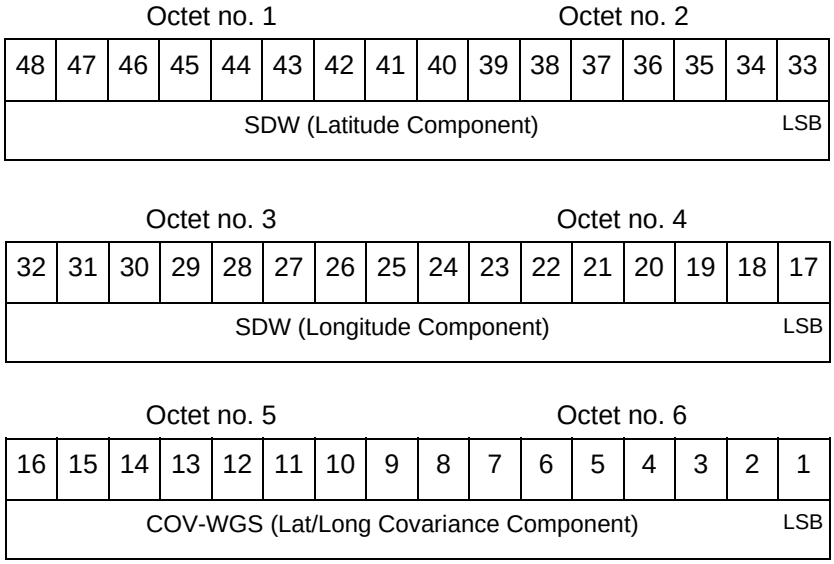


bits-16/1 (SDH) Standard deviation of Geometric Height of the target expressed in WGS-84.

LSB = 1 ft

Note: Maximum value means maximum value or above.

Structure of Subfield # 4:
Standard Deviation of Position (WGS-84)



bits-48/17 (SDW) Standard Deviation of Position of the target expressed in WGS-84

LSB = $180/2^{25}$ degrees

bits 16/1 (COV-WGS) Lat/Long Covariance Component in two's complement form

LSB = $180/2^{25}$ degrees

Maximum value = 0.17578125 degrees

Notes:

1. WGS-84 covariance component = sign {Cov(Lat,Long)} * sqrt {abs [Cov (Lat,Long)]}
2. "Maximum value" means Maximum value or above.

Encoding Rule:
The Reserved Expansion Field is optional.