

Open Geospatial Consortium

Submission Date: 2016-04-04

Approval Date: 2016-09-23

Publication Date: 2017-02-23

External identifier of this OGC® document: <http://www.opengis.net/doc/BP/CDB-navaids/1.0>

Internal reference number of this OGC® document: 16-003r2

Version: 1.0

Category: OGC® Best Practice

Editor: Carl Reed

Volume 12: OGC CDB Navaids Attribution and Navaids Attribution Enumeration Values

Copyright notice

Copyright © 2017 Open Geospatial Consortium

To obtain additional rights of use, visit <http://www.opengeospatial.org/legal/>.

Warning

This document is not an OGC Standard. This document is distributed for review and comment. This document is subject to change without notice and may not be referred to as an OGC Standard. Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Document type: OGC® Best Practice
Document subtype:
Document stage: Approved
Document language: English

License Agreement

Permission is hereby granted by the Open Geospatial Consortium, ("Licensor"), free of charge and subject to the terms set forth below, to any person obtaining a copy of this Intellectual Property and any associated documentation, to deal in the Intellectual Property without restriction (except as set forth below), including without limitation the rights to implement, use, copy, modify, merge, publish, distribute, and/or sublicense copies of the Intellectual Property, and to permit persons to whom the Intellectual Property is furnished to do so, provided that all copyright notices on the intellectual property are retained intact and that each person to whom the Intellectual Property is furnished agrees to the terms of this Agreement.

If you modify the Intellectual Property, all copies of the modified Intellectual Property must include, in addition to the above copyright notice, a notice that the Intellectual Property includes modifications that have not been approved or adopted by LICENSOR.

THIS LICENSE IS A COPYRIGHT LICENSE ONLY, AND DOES NOT CONVEY ANY RIGHTS UNDER ANY PATENTS THAT MAY BE IN FORCE ANYWHERE IN THE WORLD.

THE INTELLECTUAL PROPERTY IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND NONINFRINGEMENT OF THIRD PARTY RIGHTS. THE COPYRIGHT HOLDER OR HOLDERS INCLUDED IN THIS NOTICE DO NOT WARRANT THAT THE FUNCTIONS CONTAINED IN THE INTELLECTUAL PROPERTY WILL MEET YOUR REQUIREMENTS OR THAT THE OPERATION OF THE INTELLECTUAL PROPERTY WILL BE UNINTERRUPTED OR ERROR FREE. ANY USE OF THE INTELLECTUAL PROPERTY SHALL BE MADE ENTIRELY AT THE USER'S OWN RISK. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR ANY CONTRIBUTOR OF INTELLECTUAL PROPERTY RIGHTS TO THE INTELLECTUAL PROPERTY BE LIABLE FOR ANY CLAIM, OR ANY DIRECT, SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, OR ANY DAMAGES WHATSOEVER RESULTING FROM ANY ALLEGED INFRINGEMENT OR ANY LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR UNDER ANY OTHER LEGAL THEORY, ARISING OUT OF OR IN CONNECTION WITH THE IMPLEMENTATION, USE, COMMERCIALIZATION OR PERFORMANCE OF THIS INTELLECTUAL PROPERTY.

This license is effective until terminated. You may terminate it at any time by destroying the Intellectual Property together with all copies in any form. The license will also terminate if you fail to comply with any term or condition of this Agreement. Except as provided in the following sentence, no such termination of this license shall require the termination of any third party end-user sublicense to the Intellectual Property which is in force as of the date of notice of such termination. In addition, should the Intellectual Property, or the operation of the Intellectual Property, infringe, or in LICENSOR's sole opinion be likely to infringe, any patent, copyright, trademark or other right of a third party, you agree that LICENSOR, in its sole discretion, may terminate this license without any compensation or liability to you, your licensees or any other party. You agree upon termination of any kind to destroy or cause to be destroyed the Intellectual Property together with all copies in any form, whether held by you or by any third party.

Except as contained in this notice, the name of LICENSOR or of any other holder of a copyright in all or part of the Intellectual Property shall not be used in advertising or otherwise to promote the sale, use or other dealings in this Intellectual Property without prior written authorization of LICENSOR or such copyright holder. LICENSOR is and shall at all times be the sole entity that may authorize you or any third party to use certification marks, trademarks or other special designations to indicate compliance with any LICENSOR standards or specifications. This Agreement is governed by the laws of the Commonwealth of Massachusetts. The application to this Agreement of the United Nations Convention on Contracts for the International Sale of Goods is hereby expressly excluded. In the event any provision of this Agreement shall be deemed unenforceable, void or invalid, such provision shall be modified so as to make it valid and enforceable, and as so modified the entire Agreement shall remain in full force and effect. No decision, action or inaction by LICENSOR shall be construed to be a waiver of any rights or remedies available to it.

Contents

1. Scope	6
2. Conformance	6
3. References	7
4. Terms and Definitions	7
5. Conventions	7
5.1 Identifiers	7
6. Navais Attribution Tables.....	7
6.1 Airport	8
6.2 AirRefueling.....	10
6.3 AirRefuelingControl.....	11
6.4 AirRefuelingFootnote.....	12
6.5 AirRefuelingPoint	13
6.6 AirRefuelingSegment.....	14
6.7 Airspace Boundary	15
6.8 AirwayRestriction	16
6.9 Approach	18
6.10 Arresting Gear	20
6.11 Comms.....	21
6.12 Controlled Airspace.....	22
6.13 Enroute Airway.....	23
6.14 FirUir	25
6.15 Gate.....	26
6.16 GLS.....	27
6.17 Helipad.....	28
6.18 Heliport.....	29
6.19 HoldingPattern.....	31
6.20 Ils	32
6.21 Marker	34
6.22 MilitaryTrainingRoute.....	35
6.23 MilitaryTrainingRouteAirspace.....	36
6.24 MilitaryTrainingRouteDescription	37

6.25	MilitaryTrainingRouteOverlay	37
6.26	Mls	39
6.27	Msa	41
6.28	Navaid.....	42
6.29	Off Route Terrain Clearance Altitude	44
6.30	ParachuteJumpArea	45
6.31	ParachuteJumpAreaBoundary	46
6.32	PathPoint.....	47
6.33	PreferredRoute.....	48
6.34	Preset Site	50
6.35	RestrictiveAirspace.....	51
6.36	Runway.....	51
6.37	Sid.....	54
6.38	Special Use Airspace	55
6.39	Star.....	57
6.40	Supplemental Terminal Data	59
6.41	Terminal Procedure Climb	60
6.42	Terminal Procedure Feeder Route	61
6.43	Terminal Procedure Minima.....	62
6.44	VfrRoute	64
6.45	VfrRouteSegment	65
6.46	Waypoint	66
7.	Nav aids Attribution Enumeration Values.....	67
8.	Annex A: Revision history	110

i. **Abstract**

This OGC Best Practice, a volume of the CDB document set, provides a list and description of the instance-level attribution fields held in Navigation *Dataset Instance Attribute* files. Please refer to section 3.7 of the CDB Core Standard (Volume 1) for information on the tables that use the Nav aids key words.

ii. **Keywords**

The following are keywords to be used by search engines and document catalogues.

ogcdoc, OGC document, cdb, nav aids

iii. **Preface**

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. The Open Geospatial Consortium shall not be held responsible for identifying any or all such patent rights.

Recipients of this document are requested to submit, with their comments, notification of any relevant patent claims or other intellectual property rights of which they may be aware that might be infringed by any implementation of the standard set forth in this document, and to provide supporting documentation.

iv. **Submitting organizations**

The following organizations submitted this Document to the Open Geospatial Consortium (OGC):

CAE Inc.
Carl Reed, OGC Individual Member
Envitia, Ltd
Glen Johnson, OGC Individual Member
KaDSci, LLC
Laval University
Open Site Plan
University of Calgary
UK Met Office

The OGC CDB standard is based on and derived from an industry developed and maintained specification, which has been approved and published as OGC Document 15-003: OGC Common DataBase Volume 1 Main Body. An extensive listing of contributors to the legacy industry-led CDB specification is at Chapter 11, pp 475-476 in that OGC Best Practices Document (https://portal.opengeospatial.org/files/?artifact_id=61935).

v. Submitters

All questions regarding this submission should be directed to the editor or the submitters:

Name	Affiliation
Carl Reed	Carl Reed & Associates
David Graham	CAE Inc.

1. Scope

This informative CDB document provides a list and description of the instance-level attribution fields held in Navigation *Dataset Instance Attribute* files. This content was originally in Annexes H and I, Volume 2 CDB Best Practice.

For ease of editing and review, the standard has been separated into 12 Volumes and a schema repository.

- Volume 0: OGC CDB Companion Primer for the CDB standard. (Best Practice).
- Volume 1: OGC CDB Core Standard: Model and Physical Data Store Structure. The main body (core) of the CBD standard (Normative).
- Volume 2: OGC CDB Core Model and Physical Structure Annexes (Best Practice).
- Volume 3: OGC CDB Terms and Definitions (Normative).
- Volume 4: OGC CDB Use of Shapefiles for Vector Data Storage (Best Practice).
- Volume 5: OGC CDB Radar Cross Section (RCS) Models (Best Practice).
- Volume 6: OGC CDB Rules for Encoding Data using OpenFlight (Best Practice).
- Volume 7: OGC CDB Data Model Guidance (Best Practice).
- Volume 8: OGC CDB Spatial Reference System Guidance (Best Practice).
- Volume 9: OGC CDB Schema Package: provides the normative schemas for key features types required in the synthetic modelling environment. Essentially, these schemas are designed to enable semantic interoperability within the simulation context (Normative).
- Volume 10: OGC CDB Implementation Guidance (Best Practice).
- Volume 11: OGC CDB Core Standard Conceptual Model (Normative).
- Volume 12: OGC CDB Navaids Attribution and Navaids Attribution Enumeration Values (Best Practice).

2. Conformance

Not Applicable.

3. References

The following normative documents contain provisions that, through reference in this text, constitute provisions of this document. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. For undated references, the latest edition of the normative document referred to applies.

4. Terms and Definitions

This document uses the terms defined in Sub-clause 5.3 of [OGC 06-121r8], which is based on the ISO/IEC Directives, Part 2, Rules for the structure and drafting of International Standards. In particular, the word “shall” (not “must”) is the verb form used to indicate a requirement to be strictly followed to conform to this standard.

5. Conventions

This sections provides details and examples for any conventions used in the document. Examples of conventions are symbols, abbreviations, use of XML schema, or special notes regarding how to read the document.

5.1 Identifiers

No requirements.

6. Navais Attribution Tables

This informative document provides a list and description of the instance-level attribution fields held in Navigation *Dataset Instance Attribute* files. The attribute name is limited to a maximum of 10 characters.

The Logical data type in column 2 of the following tables refers to the dBASE III Logical data type. A true value is defined as one of the letters T, t, Y, and y; while the false value is defined as F, f, N, and n.

6.1 Airport

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	UInt64	-	-	210 1	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
AlterNam	String	50 chars	-		Alternate name other than the official name that can be used occasionally.
AsCoStNumb	UInt64	-	-		Associated Comms record storage number
BeacoAvail	Logical	Boolean	-		Indicates if a rotating beacon is present.
City	String	50 chars	-		Airport city name.
CivMilTyp	CivilMilitaryType	0-6	-		Airport usage type (civil, military, etc.)
ClearStatu	ClearanceStatus	0-3	-		Clearance status.
Country	CountryEntry	0-336	-	211 6	Country where the airport is located.
DayliTim	Float32	+/-24	Hrs		Difference to Zulu time based on the daylight saving time.
DayTimFram	String	100 chars	-		Timeframe when daylight saving time is observed by a country.
FlipPage	String	75 chars	-		Related pages for that airport in the companion FLIP.
FuelType	String	memo	-		Fuel type available.
HydElePres	Logical	Boolean	-		Indication of the presence of a hydrographic element near the airport.
IataCode	String	6 chars	-		Airport IATA designator.
IcaoCode	String	4 chars	-	210 3	Airport ICAO area code.
Ident	String	6 chars	-	210 2	Airport ICAO ident.
IfrCapab	Logical	Boolean	-		Indicates if the airport has published IFR approaches.
IslandGrou	String	50 chars	-		Airport associated with islands or group of islands.
Jasu	String	100 chars	-		Type of Jet Aircraft Starting Units (JASU) available.
LonRunLeng	UInt32	-	Ft		Length of the longest runway of the airport.
LonRunSurf	PavementType	0-3	-		Surface type of the longest runway.
MagTruIndi	MagneticTrueIndication	0-6	-		Indicates if the details and procedures are given relative to Magnetic or True North.
MagneVaria	Float32	+/-180	Deg		Magnetic variation.
MgrsPosit	String	20 chars	-		MGRS position given using the UTM or the UPS grid.
Name	String	100 chars	-		Official name.
NavIcaCod	String	4 chars	-		Recommended navaid ICAO code.
Navaiden	String	6 chars	-		Recommended navaid ident.
Notam	NotamSystem	0-4	-		Notam service.
OilType	String	75 chars	-		Type of oil available.
OperaAgenc	String	255 chars	-		Primary operating agency.

OperaHour	OperatingHours	0-4	-		Operating hours of the airport.
Point1	GeoCoordinate	x,y,z	-		Position (latitude, longitude, altitude) of the NavObject.
Remark	String	memo	-		Essential remarks for terminal procedures.
ServiRemar	String	Memo	-		Service remarks for airport.
SpeedLimit	Uint32	-	Kts		Speed limit in knots.
SpeLimAlti	Sint32	-	Ft		Altitude below where speed limits may be imposed
StateName	StateEntry	0-51	-		State or province where the airport is located.
SupFluTyp	String	50 chars	-		Type of available fluids/system/oxygen/nitrogen.
TerraImpac	Logical	Boolean	-		Indicates a terrain impact on the airport.
Timezone	Float32	+/-24	Hrs		Difference to Zulu time.
TransAltit	Sint32	-	Ft		Upper altitude limit for which the vertical position of an A/C is controlled by reference to altitudes (MSL).
TransLeve	Sint32	-	Ft		Lowest flight level available to use above the transition altitude.

6.2 AirRefueling

Attribute Name	Data type	Range	Unit	Key	Description
StoraNumbe	UInt64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
AiReOpIden	String	20 chars	-	2102	Air refueling operation identifier
AltitDescr	RefuelingAltitudeDescription	0-4	-		Indicates how Altitude 1 and 2 should be used (Refuel1)
AltitDesc1	RefuelingAltitudeDescription	0-4	-		Indicates how Altitude 1 and 2 should be used (Refuel2)
AltitDesc2	RefuelingAltitudeDescription	0-4	-		Indicates how Altitude 1 and 2 should be used (Refuel3)
ApRaBeCoSe	UInt32	-	-		APN 69/134/135 radar beacon code setting
ApRaBeCoS1	UInt32	-	-		APX 78 radar beacon code setting
BackuFrequ	UInt64	-	Hz		Backup UHF frequency
ComTelNumb	String	100	-		Commercial telephone number(s) of the scheduling unit
Country	CountryEntry	0-336	-	2116	Country where the refueling track or anchor is located
Direction	RefuelingDirection	0-8	-	2122	Predominant direction of the refueling track or anchor at the point of entry
DsnTelNumb	String	100	-		Defense switched network telephone number
IcaoCode	String	4	-		ICAO code at point of entry
PrimaFrequ	UInt64	-	Hz		Primary UHF frequency
ReceiChann	UInt32	-	-		Air-to-Air Y-band tacan channel used during refueling operations
Point	GeoCoordinate	x,y,z	-		Reference Position (latitude, longitude, altitude)
RefueAltit	Sint32	-	Ft		Altitude 1 to be used with altitude description 1
RefueAlti1	Sint32	-	Ft		Altitude 2 to be used with altitude description 1
RefueAlti2	Sint32	-	Ft		Altitude 1 to be used with altitude description 2
RefueAlti3	Sint32	-	Ft		Altitude 2 to be used with altitude description 2
RefueAlti4	Sint32	-	Ft		Altitude 1 to be used with altitude description 3
RefueAlti5	Sint32	-	Ft		Altitude 2 to be used with altitude description 3
Remark	String	memo	-		Remarks are limited to essential information
SchedUni	String	130	-		General information on scheduling unit (name, area, etc.)
TankeChann	UInt32	-	-		Air-to-Air Y-band tacan channel used during refueling operations
Type	RefuelingOperationType	0-3	-		Type of refueling operation

6.3 AirRefuelingControl

Attribute Name	Data type	Range	Unit	Key	Description
StoraNumbe	Uint64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
AiReOpIden	String	20 chars	-	2108	Air refueling operation identifier
AiReStNumb	Uint64	-	-		Associated air refueling record storage number
AiTrCoCent	String	50 chars	-		ATC controlling airspace where refueling track/anchor is located
AiTrCoCeRe	String	memo	-		Remarks pertaining to the controlling agency, frequency, frequency direction, or general information
AtcCenMult	Uint32	-	-	2115	Differentiates between different entries for the same ATC center
Country	CountryEntry	0-336	-		Country where the air traffic control center is located
Direction	RefuelingDirection	0-8	-	2122	Predominant direction of the refueling track or anchor at the point of entry
Frequency1	Uint64	-	Hz		Center frequency 1
Frequency2	Uint64	-	Hz		Center frequency 2
Frequency3	Uint64	-	Hz		Center frequency 3
Frequency4	Uint64	-	Hz		Center frequency 4
Frequency5	Uint64	-	Hz		Center frequency 5
FreDirRest	FrequencyDirectionRestriction	0-3	-		Direction in which the specified frequency applies
FreDirRes1	FrequencyDirectionRestriction	0-3	-		Direction in which the specified frequency applies
FreDirRes2	FrequencyDirectionRestriction	0-3	-		Direction in which the specified frequency applies
FreDirRes3	FrequencyDirectionRestriction	0-3	-		Direction in which the specified frequency applies
FreDirRes4	FrequencyDirectionRestriction	0-3	-		Direction in which the specified frequency applies
IcaoCode	String	4 chars	-		ICAO code
Point1	GeoCoordinate	x,y,z	-		Reference Position (longitude, latitude, altitude)
RefPoiTyp	RefuelingPointType	0-7	-		Type of refueling point

6.4 AirRefuelingFootnote

Attribute Name	Data type	Range	Unit	Key	Description
StoraNumbe	UInt64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
AiReOpIden	String	20 chars	-	2108	Air refueling operation identifier
AiReStNumb	UInt64	-	-		Associated air refueling record storage number
Country	CountryEntry	0-336	-		Country where the refueling operation is located
Direction	RefuelingDirection	0-8	-		Predominant direction of the refueling track or anchor at the point of entry
Footnote	String	memo	-		Footnote
IcaoCode	String	4 chars	-		ICAO code
Point1	GeoCoordinate	x,y,z	-		Reference Position (longitude, latitude, altitude)

6.5 AirRefuelingPoint

Attribute Name	Data type	Range	Unit	Key	Description
StoraNumbe	Uint64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
AiReOpIden	String	20 chars	-	2108	Air refueling operation identifier
AiReStNumb	Uint64	-	-		Associated air refueling record storage number
Bearing	Uint32	0-359	Deg		Bearing TO navaid (brg FROM navaid if DME)
CoWiNaFla	Logical	Boolean	-		Indicates if point is collocated with a navaid
Country	CountryEntry	0-336	-		Country where the refueling point is located
Direction	RefuelingDirection	0-8	-		Predominant track direction of the refueling track or anchor at the point of entry
Distance	Uint32	-	Nm		Distance to navaid
IcaoCode	String	4 chars	-		ICAO code
Ident	String	6 chars	-	2102	Refueling point identifier
NavaiCount	CountryEntry	0-336	-		Navaid country
NavaiIden	String	6 chars	-		Navaid identifier
NavKeyCod	Uint32	-	-		Navaid key code
NavaidType	NavaidType	0-15	-		Navaid type
Point1	GeoCoordinate	x,y,z	-		Position (longitude, latitude, altitude) of refueling point
SequeNumb e	Uint32	-	-	2115	Refueling point sequence number
Type	RefuelingPointType	0-7	-		Type of refueling point

6.6 AirRefuelingSegment

Attribute Name	Data type	Range	Unit	Key	Description
StoraNumbe	UInt64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
AiReOpIden	String	20 chars	-	2108	Air refueling operation identifier
AiReStNumb	UInt64	-	-		Associated air refueling record storage number
Point2	GeoCoordinate	x,y,z	-		Arc origin position (longitude, latitude, altitude)
ArcSegDeri	ArcSegmentDerivation	0-3	-		Indicates how the arc segment is defined
Bearing1	Float32	+/-180	Deg		Bearing 1 from center coordinates or navaid
Bearing2	Float32	+/-180	Deg		Bearing 2 from center coordinates or navaid
Country	CountryEntry	0-336	-		Country where the refueling segment is located
Direction	RefuelingDirection	0-8	-		Predominant direction of the refueling track or anchor at the point of entry
IcaoCode	String	4 chars	-		ICAO code
NavaiCount	CountryEntry	0-336	-		Navaid country
NavaiIden	String	6 chars	-		Navaid identifier
NavKeyCod	UInt32		-		Navaid key code
NavaidType	NavaidType	0-15	-		Navaid type
Point1	GeoCoordinate	x,y,z	-		Position (longitude, latitude, altitude) of refueling point
Radius1	Float32	-	Nm		Radius 1
Radius2	Float32	-	Nm		Radius 2
Point3	GeoCoordinate	x,y,z	-		Segment end position (longitude, latitude, altitude)
SegmeNumbe	UInt32	-	-	2115	Defines relative position of airspace segment
Shape	BoundaryShape	0-8	-		Type of airspace segment being plotted

6.7 Airspace Boundary

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	UInt64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
AirwaLeve	AirwayLevel	0-3	-		Airspace structure in which boundary is effective (high/low)
Class	String	2 chars	-		Airspace boundary class
ClaExcFla	Logical	Boolean	-		Flag indicating exceptions to the airspace class
ClaExcRema	String	memo	-		Provides the details of the exception in the airspace
ComCalSig	String	40 chars	-	2111	Call sign of the communications facilities
ContrAutho	String	60 chars	-		Office responsible for air traffic within airspace
Country	CountryEntry	0-336	-	2116	Country where the boundary is located
Frequency	UInt64	-	Hz		Frequency for communicating with identified facility
Frequenc1	UInt64	-	Hz		Frequency 2 used for communicating with identified facility
IcaoCode	String	4 chars	-		ICAO code of the airspace boundary
Ident	String	6 chars	-	2102	ICAO ident of airspace boundary
LowEffAlti	Sint32	-	Ft		Lower vertical limit of the given airspace
LoEfAlRefe	AltitudeReference	0-4	-		Lower effective altitude reference
LowRvsAlti	Sint32	-	Ft		Lower vertical limit of the given RVSM airspace
Name	String	50 chars	-		Official name of the airspace boundary
Point1	GeoCoordinate	x,y,z	-		Reference Position (longitude, latitude, altitude)
ReqNavPerf	Float32	-	Nm		Required performance accuracy necessary for operation within airspace
Type	AirspaceBoundaryType	0-14	-		Airspace boundary type
UppEffAlti	Sint32	-	Ft		Upper vertical limit of the given airspace
UpEfAlRefe	AltitudeReference	0-4	-		Upper effective altitude reference
UppRvsAlti	Sint32	-	Ft		Upper vertical limit of the given RVSM airspace

6.8 AirwayRestriction

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	UInt64	-	-	2101	Storage number.
BloAltTo	Logical	Boolean	-		Consider restriction altitude 1 to 2 as a restricted range
BloAltTo1	Logical	Boolean	-		Consider restriction altitude 2 to 3 as a restricted range
BloAltTo2	Logical	Boolean	-		Consider restriction altitude 3 to 4 as a restricted range
BloAltTo3	Logical	Boolean	-		Consider restriction altitude 4 to 5 as a restricted range
BloAltTo4	Logical	Boolean	-		Consider restriction altitude 5 to 6 as a restricted range
BloAltTo5	Logical	Boolean	-		Consider restriction altitude 6 to 7 as a restricted range
BlockAltit	Logical	Boolean	-		Consider restriction altitude 7 as a restricted altitude
Country	CountryEntry	0-336	-	2116	Country where the start fix point is located
CruisTabl	CruiseTable	0-4	-		Cruise table indicator
EndDate	String	12 chars	-		End date
EnFilcCod	String	4 chars	-		ICAO code of end fix point
EndFixIden	String	6 chars	-		End fix point identifier
ExcluIndic	ExclusionIndicator	0-4	-		Altitudes to be excluded
OpeEndDay	DayOfWeek	0-7	-		Time of operation end day
OpeEndDay1	DayOfWeek	0-7	-		Time of operation end day
OpeEndDay2	DayOfWeek	0-7	-		Time of operation end day
OpeEndDay3	DayOfWeek	0-7	-		Time of operation end day
OpeStaDay	DayOfWeek	0-7	-		Time of operation start day
OpeStaDay1	DayOfWeek	0-7	-		Time of operation start day
OpeStaDay2	DayOfWeek	0-7	-		Time of operation start day
OpeStaDay3	DayOfWeek	0-7	-		Time of operation start day
OpeEndTime	String	20 chars	-		Time of operation end time
OpeEndTim1	String	20 chars	-		Time of operation end time
OpeEndTim2	String	20 chars	-		Time of operation end time
OpeEndTim3	String	20 chars	-		Time of operation end time
OpeStaTime	String	20 chars	-		Time of operation start time
OpeStaTim1	String	20 chars	-		Time of operation start time
OpeStaTim2	String	20 chars	-		Time of operation start time
OpeStaTim3	String	20 chars	-		Time of operation start time
RestrAltit	Sint32	-	Ft		Restriction altitude
RestrAlti1	Sint32	-	Ft		Restriction altitude
RestrAlti2	Sint32	-	Ft		Restriction altitude
RestrAlti3	Sint32	-	Ft		Restriction altitude
RestrAlti4	Sint32	-	Ft		Restriction altitude
RestrAlti5	Sint32	-	Ft		Restriction altitude
RestrAlti6	Sint32	-	Ft		Restriction altitude
RestrIden	UInt32	6	-		Restriction identifier
RestrNot	String	memo	-		Restriction note
RestrTyp	RestrictionType	0-4	-		Restriction type

RoutIdent	String	6 chars	-	2102	Route identifier
StartDate	String	12 chars	-		Start date
StFilcCod	String	4 chars	-		ICAO code of start fix point
StaFixIden	String	6 chars	-		Start fix point identifier
TimeCode	TimeCode	0-4	-		Time code
TimeIndica	TimeIndicator	0-3	-		Time indicator

6.9 Approach

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	UInt64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
AirStoNumb	UInt64	-	-		Airport storage number
Altitude1	Sint32	-	Ft		First altitude limit
AltitTyp	AltitudeType	0-4	-		Altitude 1 type
Altitude2	Sint32	-	Ft		Second altitude limit
AltitTyp1	AltitudeType	0-4	-		Altitude 2 type
AltitDescr	AltitudeDescription	0-13	-		Altitude description
ArcRadius	Float32	-	Nm		Arc radius
CenterFix	String	10 chars	-		Point which defines the center of the arc flight path
CeFilcCod	String	4 chars	-		ICAO code of the center fix
Country	CountryEntry	0-336	-	2116	Country associated with the terminal procedure
Course	Float32	+/-180	Deg		Outbound course from waypoint in fix ident
FixDetails	FixDetails	0-9	-		Fix details
FixFuncio	FixFunction	0-7	-		Fix function
FixlcaCod	String	4 chars	-		ICAO code of the fix point
FixIdent	String	10 chars	-		Fix identifier
FlyOveTyp	FlyOverType	0-4	-		Fly over type
MagCouIndi	MagneticTrueIndication	0-6	-		Indicates if the course provided is magnetic course
NavaiCount	CountryEntry	0-336	-		Country where recommended navaid 1 is located
Point2	GeoCoordinate	x,y,z	-		Navaid 1 DME position (longitude, latitude, altitude)
NavKeyCod	UInt32	-	-		Distinguish between navaid of same type with same ident in same country
NavMagVari	Float32	+/-180	Deg		Recommended navaid 1 magnetic variation
Point3	GeoCoordinate	x,y,z	-		Navaid 1 position (longitude, latitude, altitude)
NavaiTyp	SegmentNavaidType	0-13	-		Recommended navaid 1 type
NavaiCoun1	CountryEntry	0-336	-		Country where recommended navaid 2 is located
Point4	GeoCoordinate	x,y,z	-		Navaid 2 DME position (longitude, latitude, altitude)
NavKeyCod1	UInt32	-	-		Distinguish between navaid of same type with same ident in same country
NavMagVar1	Float32	+/-180	Deg		Recommended navaid 2 magnetic variation
Point5	GeoCoordinate	x,y,z	-		Navaid 2 position (longitude, latitude, altitude)
NavaiTyp1	SegmentNavaidType	0-13	-		Recommended navaid 2 type
PathTermin	PathTermination	0-23	-		Path and Termination
ReNalcCod	String	4 chars	-		ICAO code of the recommended navaid 1
RecNavIden	String	10 chars	-		Recommended navaid identifier 1
RecNavIde1	String	10 chars	-		Recommended navaid identifier 2
ReqNavPerf	Float32	-	Nm		Required navigation performance
RouteDista	Float32	-	Nm		Distance in nautical miles from waypoint in fix ident
RouteType	RouteType	0-4	-		Termination Procedure Type
SpeAirCate	AircraftCategory	0-4	-		Aircraft category that speed limit 1 applies to

SpeedAltit	Sint32	-	Ft		Altitude where speed limit 1 applies
SpeedLimit	Uint32	-	Kts		Speed limit 1
SpeAirCat1	AircraftCategory	0-4	-		Aircraft category that speed limit 2 applies to
SpeedAlti1	Sint32	-	Ft		Altitude where speed limit 2 applies
SpeedLimi1	Uint32	-	Kts		Speed limit 2
SuTeDaStNu	Uint64	-	-		Storage number of associated Supplemental Terminal Data record
ThrCroHeig	Uint32	-	Ft		Threshold crossing height
TransAltit	Sint32	-	Ft		Transition altitude
TurnDirect	TurnDirection	0-3	-		Turn direction
TurDirVali	Logical	Boolean	-		Turn direction valid
WaypoCount	CountryEntry	0-336	-		Waypoint country
WaypoDescr	WaypointDescription	0-15	-		Waypoint description
WaypoDista	Float32	-	Nm		Nautical miles between fix point and recommended navaid 1 (RHO)
WaypoDist1	Float32	-	Nm		Nautical miles between fix point and recommended navaid 2
WayMagBear	Float32	+/-180	Deg		Magnetic bearing between fix point and recommended navaid 1 (THETA)
WayMagBea1	Float32	+/-180	Deg		Magnetic bearing between fix point and recommended navaid 2
WayMagVari	Float32	+/-180	Deg		Waypoint magnetic variation
Point1	GeoCoordinate	x,y,z	-		Waypoint position (longitude, latitude, altitude)
AirlcaCod	String	4 chars	-		ICAO code of the associated airport
Airpolden	String	6 chars	-	2102	Identifier of the associated airport
AppRouTyp	ApproachRouteType	0-39	-		Approach route type
GpsFmsIndi	GpsFmsIndicator	0-6	-		Authorized system used for procedure
Ident	String	6 chars	-	2108	SID/STAR/Approach identifier
MultiCod	String	2 chars	-		Multiple records having same center fix
MultiIndic	String	10 chars	-		Multiple records having same transition fix
RouteQuali	RouteQualifier1	0-9	-		Approach route qualifier 1
RouteQual1	RouteQualifier2	0-6	-		Approach route qualifier 2
SequeNumbe	Uint32	-	-		Sequence number
TransIden	String	10 chars	-		Transition identifier
VertiAngl	Float32	+/-180	Deg		Descent angle for the procedure

6.10 Arresting Gear

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumber	UInt64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
Aircalden	String	6 chars	-	2108	ICAO identifier of the associated airport
Airpolden	String	10 chars	-	2102	DAFIF identifier of the associated airport
Point1	GeoCoordinate	x,y,z	-		Position (longitude, latitude, altitude) of airport
AirStoNumber	UInt64	-	-		Storage number of the associated airport
Country	CountryEntry	0-336	-	2116	Country in which the airport is located
DisFroRefere	UInt32	-	Ft	2114	Distance from the reference given in location reference
LocatRefer	LocationReference	0-3	-	2122	Reference for location of arresting gear
Runwalde	String	6 chars	-	2111	Runway identifier
Type	String	80 chars	-	2107	Arresting gear type

6.11 Comms

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	Uint64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
24HouAvail	Logical	Boolean	-		24 hour availability of comms frequency flag
AirlcaCod	String	4 chars	-		ICAO code of the associated airport
Airpolden	String	6 chars	-	2102	Identifier of the associated airport
AirStoNumb	Uint64	-	-		Storage number of the associated airport
AltitDescr	AltitudeDescription	0-13	-		Altitude description
AntenPatte	String	30 chars	-		Antenna Pattern Description
AreaCode	String	12 chars	-		Area code for telephone numbers
CallSign	String	50 chars	-		Name of facility being called
CellNetwor	String	30 chars	-		Cellular network information
CommsAltit	Sint32	-	Ft		Communications altitude limit 1
CommsAlti1	Sint32	-	Ft		Communications altitude limit 2
CommsDetai	CommsDetails	0-7	-		Communications details
CommsDista	Uint32	-	Nm		Communications distance
CommsEncry	CommsEncryption	0-1	-		Communications encryption status/mode
ComFliTyp	CommsFlightType	0-4	-		FIR/UIR address to supplement identifier
CommsType	CommsType	0-58	-	2107	Communications type
Country	CountryEntry	0-336	-	2116	Country where the communications information is applicable
DistaDescr	DistanceDescription	0-2	-		Comms distance description
Encrypted	Logical	Boolean	-		Encrypted
FirUirlDen	String	6 chars	-	2108	FIR/UIR identifier
FirUirIndi	FirUirType	0-3	-		FIR/UIR indicator
Frequency	Uint64	-	Hz	2104	Communications frequency
FrequTyp	FrequencyType	0-7	-		Communications frequency type
GuardTrans	GuardTransmit	0-3	-		Communications transmit/receive flag
MagneVaria	Float32	+/-180	Deg		Magnetic variation
Modulation	Modulation	0-2	-		Signal modulation
MonitFrequ	MonitoredFrequency	0-6	-		Monitored emergency frequencies
Point1	GeoCoordinate	x,y,z	-		Position (longitude, latitude, altitude) of communications antenna
RadarCapab	Logical	Boolean	-		Radar capability flag
ReceiSensi	Float64	-	Watt		Receiver sensitivity
Remark	String	memo	-		Remarks associated with Comms station
ReAiStNumb	Uint64	-	-		Storage number of associated remote airport facility
ReFalcCod	String	4 chars	-		ICAO code of associated remote facility
RemFacDen	String	6 chars	-		Identifier of associated remote facility
RemFacTyp	FacilityRecordType	0-4	-		Associated remote facility type
RemoteName	String	50 chars	-	2120	Name of associated remote facility
ReNaStNumb	Uint64	-	-		Storage number of associated remote navaid

RetraAvail	Logical	Boolean	-		Retransmission available
RetraFrequ	Uint64	-	Hz		Retransmission frequency
Sector	String	100 chars	-		Area in which frequency is effective
SeAiStNumb	Uint64	-	-		Storage number of sector airport facility
SecEndBear	Uint32	0-359	Deg		Sector end bearing
SeFalcCod	String	4 chars	-		ICAO code of sector facility
SecFacIden	String	6 chars	-		Identifier of sector facility
SecFacTyp	FacilityRecordType	0-4	-		Sector facility type
SeNaStNumb	Uint64	-	-		Storage number of sector navaid
SecStaBear	Uint32	0-359	Deg		Sector start bearing
ServiIndic	ServiceIndicator	0-10	-		Communications service indicator
SignaEmiss	SignalEmission	0-7	-		Signal emission
SpeOpeHour	String	100 chars	-		Hours of operation different from airport/heliport
TeleNumbe	String	20 chars	-		Telephone number
TransPowe	Float64	-	Watt		Transmission power
VoiceMessa	String	30 chars	-		Voice message

6.12 Controlled Airspace

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	Uint64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
AiBoStNumb	Uint64	-	-		Associated AirspaceBoundary record storage number
AirspCente	String	6 chars	-	2102	Ident for airspace 'center'
AirspClass	String	2 chars	-		Airspace classification (one character)
AirspTyp	AirspaceType	0-18	-	2107	Controlled airspace type
AirTypChar	String	2 chars	-	2122	Controlled airspace type character read directly from data file
ArcBearing	Float32	+/-180	Deg		Arc bearing
ArcDistanc	Float32	-	Nm		Arc distance
ArcDistan1	Float32	-	Nm		Arc distance (radius of arc from center point)
Point3	GeoCoordinate	x,y,z	-		Arc origin position (longitude, latitude, altitude)
ArcSegDeri	ArcSegmentDerivation	0-3	-		Indicates how the arc segment is defined
Bearing1	Float32	+/-180	Deg		True bearing from arc origin or navaid
Bearing2	Float32	+/-180	Deg		True bearing from arc origin or navaid
BoundEn	Logical	Boolean	-		End of boundary description - return to origin point
BoundShap	BoundaryShape	0-8	-		Boundary shape type
Country	CountryEntry	0-336	-	2116	Country where airspace is located
Country1	CountryEntry	0-336	-		Country through which the boundary passes
Country2	CountryEntry	0-336	-		Country through which the boundary passes
Country3	CountryEntry	0-336	-		Country through which the boundary passes
Country4	CountryEntry	0-336	-		Country through which the boundary passes
Country5	CountryEntry	0-336	-		Country through which the boundary passes

IcaoCode	String	4 chars	-		ICAO code for the airspace
Level	AirwayLevel	0-3	-		Type of airway (high, low, or either)
LowerLimit	Sint32	-	Ft		Lower limit
LoLiAIRefe	AltitudeReference	0-4	-		Altitude reference
MultiCod	String	2 chars	-	2118	Differentiate between airspaces with same designator
Name	String	50 chars	-		Controlled airspace name
NavaiCount	CountryEntry	0-336	-		Country in which navaid is located
Navaiden	String	6 chars	-		Navaid identifier
NavKeyCod	Uint32	-	-		Distinguish between same type navaid with same ident and country
NavaidType	NavaidType	0-15	-		Navaid type
Notam	Logical	Boolean	-		Active times by NOTAM
Point2	GeoCoordinate	x,y,z	-		Position (longitude, latitude, altitude)
Point1	GeoCoordinate	x,y,z	-		Reference Position (longitude, latitude, altitude)
ReqNavPerf	Float32	-	Nm		Required navigation performance
SequeNumbe	Uint32	-	-		Sequence number
TimeCode	PrimaryTimeCode	0-4	-		Time codes for primary records
UpperLimit	Sint32	-	Ft		Upper limit
UpLiAIRefe	AltitudeReference	0-4	-		Reference for upper limit altitude

6.13 Enroute Airway

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	Uint64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
AirwaLeve	AirwayLevel	0-3	-		Airway level
AirwaRestr	Logical	Boolean	-		Airway restriction exists
AtcComFla	Logical	Boolean	-		ATC compulsory waypoint flag
BoundCod	BoundaryCode	0-10	-		Boundary code
Country	String	95 chars	-		List of countries through which the ATS route segment passes
CrLeNoStFl	Logical	Boolean	-		IFR cruising levels are not in agreement with appropriate diagrams (FLIP)
CruisTabl	CruiseTable	0-4	-		Cruise table indicator
Direction	Direction	0-2	-		Predominant direction of ATS route
DirecRestr	DirectionRestriction	0-3	-		Direction restriction
EnAiRoTyp	EnrouteAirwayRouteType	0-7	-		Enroute airway route type
FixCountry	CountryEntry	0-336	-	2116	Country where the fix point is located
FixDetails	FixDetails	0-9	-		Fix details
FixFuncio	FixFunction	0-7	-		Fix function
FixlcaCod	String	4 chars	-		ICAO code of fix point
FixIdent	String	6 chars	-		Fix identifier
FixNavTyp	NavaidType	0-15	-		Fix type
FixRecTyp	FixRecordType	0-8	-		Fix point record type
FixStoNumb	Uint64	-	-		Fix point storage number

FixTurRadi	Float32	-	Nm		Fix turn radius 1
FixTurRad1	Float32	-	Nm		Fix turn radius 2
FlyOveTyp	FlyOverType	0-4	-		Fly over type
FrequClas	FrequencyClass	0-2	-		Frequency class of ATS route (UHF/VHF or LF/MF)
IcaoCode	String	4 chars	-		ICAO Code
InbouCours	Float32	+/-180	Deg		Inbound course to waypoint in fix ident
InbCouRefe	MagneticTrueIndication	0-6	-		Inbound course reference
MaximAltit	Sint32	-	Ft		Maximum altitude for segment
MaxFliAlti	Sint32	-	Ft		Maximum altitude for airway
MinimAltit	Sint32	-	Ft		Altitude limit in direction flight coded for segment
MinimAlti1	Sint32	-	Ft		Segment altitude limit for opposite of coded direction of flight
MinFliAlti	Sint32	-	Ft		Minimum altitude limit for airway
OutboCours	Float32	+/-180	Deg		Outbound course from waypoint in fix ident
OutCouRefe	MagneticTrueIndication	0-6	-		Outbound course reference
Point1	GeoCoordinate	x,y,z	-		Position (longitude, latitude, altitude) of waypoint
ReNalcCod	String	4 chars	-		ICAO code of recommended navaid
RecNavIden	String	6	-		Recommended navaid identifier
Remark	String	memo	-		Essential information related to ATS route
ReqNavPerf	Float32	-	Nm		Required navigation performance
RouteDista	Float32	-	Nm		Distance in nautical miles from waypoint in fix ident
RoutIdent	String	8 chars	-	2102	Route identifier
RouSegTyp	AtsRouteSegmentType	0-2	-		ATS route segment type
RouteStatu	RouteStatus	0-5	-		ATS route status
RvsmFlag	Logical	Boolean	-		Reduced vertical separation minima
SequeNumbe	UInt32	-	-		Sequence number
StateName	StateEntry	0-51	-		State through which ATS route passes
TransRadiu	Float32	-	-		Transition radius
WaypoDescr	WaypointDescription	0-15	-		Waypoint description
WaypoDista	Float32	-	Nm		Nautical miles between fix point and recommended navaid
WayMagBear	Float32	+/-180	Deg		Magnetic bearing between fix point and recommended navaid

6.14 FirUir

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	UInt64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
AdjFirIden	String	6 chars	-	2108	Adjacent FIR ident
AdjUirIden	String	6 chars	-	2120	Adjacent UIR ident
AiBoStNumb	UInt64	-	-		Associated airspace boundary record storage number
AltitUni	AltitudeUnit	0-3	-		Unit used in specific FIR/UIR to fulfill requirement of ICAO flight plan
ArcBearing	Float32	+/-180	Deg		Arc bearing
ArcDistanc	Float32	-	Nm		Arc distance
ArcDistan1	Float32	-	Nm		Arc distance (radius of arc from center point)
Point2	GeoCoordinate	x,y,z	-		Arc origin position (longitude, latitude, altitude)
ArcSegDeri	ArcSegmentDerivation	0-3	-		Indicates how the arc segment is defined
Bearing1	Float32	+/-180	Deg		True bearing from arc origin or navaid
Bearing2	Float32	+/-180	Deg		True bearing from arc origin or navaid
BoundEn	Logical	Boolean	-		End of boundary description - return to origin point
BoundShap	BoundaryShape	0-8	-		Boundary shape type
Country1	CountryEntry	0-336	-		Country through which the boundary passes
Country2	CountryEntry	0-336	-		Country through which the boundary passes
Country3	CountryEntry	0-336	-		Country through which the boundary passes
Country4	CountryEntry	0-336	-		Country through which the boundary passes
Country5	CountryEntry	0-336	-		Country through which the boundary passes
CruisTabl	CruiseTable	0-4	-		Cruise table applicable
EntRepRequ	Logical	Boolean	-		Entry report required for FIR/UIR
FirUppLimi	Sint32		Ft		FIR Upper Limit
FlightType	CommsFlightType	0-4	-	2122	Type of airway (high, low, or either)
IcaoCode	String	4 chars	-		FIR/UIR ICAO code
Ident	String	6 chars	-	2102	FIR/UIR Ident
Name	String	50 chars	-		Fir/Uir name
NavaiCount	CountryEntry	0-336	-		Country in which navaid is located
Navaiden	String	6 chars	-		Navaid identifier
NavKeyCod	UInt32	-	-		Distinguish between same type navaid with same ident and country
NavaidType	NavaidType	0-15	-		Navaid type
Point1	GeoCoordinate	x,y,z	-		Position (longitude, latitude, altitude)
SequeNumbe	UInt32	-	-		Sequence number
SpeedUnit	SpeedUnit	0-3	-		Unit used in specific FIR/UIR to fulfill requirement of ICAO flight plan
Type	FirUirType	0-3	-	2107	FIR/UIR type
UirLowLimi	Sint32	-	Ft		UIR Lower limit
UirUppLimi	Sint32	-	Ft		Upper limit

6.15 Gate

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	UInt64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
Airline	String	50 chars	-		Airline assigned to gate
AirlcaCod	String	4 chars	-		ICAO code of the associated airport
Airpolden	String	6 chars	-	2102	Identifier of the associated airport
AirStoNumb	UInt64	-	-		Storage number of the associated airport
Country	CountryEntry	0-336	-	2116	Country where the gate is located
Ident	String	6 chars	-	2108	Gate identifier
Name	String	50 chars	-		Name commonly applied to the gate
Orientatio	Float32	+/-180	Deg		Orientation of gate (bearing)
Point1	GeoCoordinate	x,y,z	-		Position (longitude, latitude, altitude) of gate

6.16 GLS

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	Uint64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
Airpolden	String	6 chars	-	2102	Ident of the associated airport
AirStoNumb	Uint64	-	-		Storage number of the associated airport
ApproSlop	Float32	+/-180	Deg		Glideslope angle of the GLS approach
Bearing	Float32	+/-180	Deg		Localizer bearing of GLS approach
Category	LandingAidCategory	0-9	-		Category/Class of the GLS
Channel	String	10 chars	-		Channel decoded to identify frequency of differential GLS ground station and approach info sent by diff. GLS ground station
Country	CountryEntry	0-336	-	2116	Country where the GLS is located
IcaoCode	String	4 chars	-	2103	ICAO code
Ident	String	6 chars	-	2108	GLS reference path identifier
LocatIden	String	10 chars	-		Airport or heliport ICAO location identifier code where transmitter is installed
MagneVaria	Float32	+/-180	Deg		Magnetic variation
Point1	GeoCoordinate	x,y,z	-		Station position (longitude, latitude, altitude)
Runwalden	String	6 chars	-		Ident of the associated runway
RunStoNumb	Uint64	-	-		Storage number of the associated runway
SerVolRadi	Uint32	-	Nm		Radius of service volume around transmitter
StatiTyp	GlsStationType	0-2	-		Type of differential ground station (eg: LAAS/GLS or SCAT-1)
TdmaSlot	String	30 chars	-		Time division multiple access (TDMA) slot in which ground station transmits related approach

6.17 Helipad

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	UInt64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
AircrTyp	String	10 chars	-		Aircraft type known to have used helipad in last 5 years.
Point1	GeoCoordinate	x,y,z	-		Position (longitude, latitude, altitude) of the helipad approach end.
Bearing	Float32	+/-180	Deg		Magnetic bearing.
Country	CountryEntry	0-336	-	2116	Helipad country.
Point2	GeoCoordinate	x,y,z	-		Position (longitude, latitude, altitude) of the displaced threshold (latitude, longitude, elevation).
HelipClose	Logical	Boolean	-		Indicates if the helipad is closed or unusable.
HellcaCod	String	4 chars	-	2103	Associated Heliport ICAO code.
Heliplden	String	6 chars	-	2108	Associated Heliport identifier.
HelStoNumb	UInt64	-	-		Associated Heliport storage number.
Ident	String	6 chars	-	2102	Helipad identifier.
Length	UInt32	-	Ft		Helipad length.
LightSyste	LightingSystem	0-64	-		Lighting system 1.
LightSyst1	LightingSystem	0-64	-		Lighting system 2.
LightSyst2	LightingSystem	0-64	-		Lighting system 3.
PadShape	PadShape	0-2	-		Shape of helipad (circular or rectangular).
SequeNumbe	UInt32	-	-	2115	Sequence number to differentiate helipads at same heliport.
Slope	Float32	-	%		Helipad gradient
Point3	GeoCoordinate	x,y,z	-		Position (longitude, latitude, elevation) of the helipad stop end.
StopwLengt	UInt32	-	Ft		Length of the area beyond the takeoff helipad.
StoSurTyp	RunwaySurfaceType	0-21	-		Stopway surface type.
SurfaTyp	RunwaySurfaceType	0-21	-		Helipad surface type.
TakeoDista	UInt32	-	Ft		Takeoff distance available.
TrueBearin	Float32	+/-180	Deg		Helipad true bearing.
TruNorRefe	Logical	Boolean	-		True North reference flag.
Width	UInt32	10	Ft		Helipad width.

6.18 Heliport

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	UInt64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
AlterNam	String	50 chars	-		Alternate name other than the official name that can be used occasionally.
AsCoStNumb	UInt64	-	-		Associated Comms record storage number
BeacoAvail	Logical	Boolean	-		Indicates if a rotating beacon is present.
City	String	50 chars	-		Heliport city name.
CivMilTyp	CivilMilitaryType	0-6	-		Heliport usage type (civil, military, etc.).
ClearStatu	ClearanceStatus	0-3	-		Clearance status.
Country	CountryEntry	0-336	-	2116	Country where the heliport is located.
DayliTim	Float32	+/-24	Hrs		Difference to Zulu time based on the daylight saving time.
DayTimFram	String	100 chars	-		Timeframe when daylight saving time is observed by a country.
FlipPage	String	75 chars	-		Related pages for that heliport in the companion FLIP.
FuelType	String	memo	-		Fuel type available.
HydElePres	Logical	Boolean	-		Indication of the presence of an hydrographic element near the heliport.
IataCode	String	6 chars	-	2106	Heliport IATA designator.
IcaoCode	String	4 chars	-	2103	Heliport ICAO area code.
Ident	String	6 chars	-	2102	Heliport ICAO ident.
IfrCapabil	Logical	Boolean	-		Indicates if the heliport has published IFR approaches.
IslanGrou	String	50 chars	-		Heliport associated with islands or group of islands.
Jasu	String	100 chars	-		Type of Jet Aircraft Starting Units (JASU) available.
MagneVaria	Float32	+/-180	Deg		Magnetic variation.
MagTruIndi	MagneticTrueIndication	0-6	-		Indicates if the details and procedures are given relative to Magnetic or True North.
MgrsPositi	String	20 chars	-		MGRS position given using the UTM or the UPS grid.
Name	String	100 chars	-		Official name.
NavIcaCod	String	4 chars	-		Recommended navaid ICAO code.
Navaiden	String	6 chars	-		Recommended navaid ident.
Notam	NotamSystem	0-4	-		Notam service.
OilType	String	75 chars	-		Type of oil available.
OperaHour	OperatingHours	0-4	-		Operating hours of the heliport.
PadDimensi	UInt32	-	Ft		Pad dimension.
PadDimens1	UInt32	-	Ft		Pad dimension.
PadIdent	String	6 chars	-	2108	Helipad identifier.
PadShape	PadShape	0-2	-		Pad shape.
Point1	GeoCoordinate	x,y,z	-		Position (longitude, latitude, altitude) of the NavObject.
Remark	String	memo	-		Essential remarks for terminal procedures.
ServiRemar	String	memo	-		Service remarks for airport.

SpeedLimit	UInt32	-	Kts	Speed limit in knots.
SpeLimAlti	Sint32	-	Ft	Altitude below where speed limits may be imposed
StateName	StateEntry	0-51	-	State or province where the heliport is located.
SupFluTyp	String	50 chars	-	Type of available fluids/system/oxygen/nitrogen.
TerraImpac	Logical	Boolean	-	Indicates a terrain impact on the heliport.
Timezone	Float32	+/-24	Hrs	Difference to Zulu time.
TransAltit	Sint32	-	Ft	Upper altitude limit for which the vertical position of an A/C is controlled by reference to altitudes (MSL).
TransLeve	Sint32	-	Ft	Lowest flight level available to use above the transition altitude.

6.19 HoldingPattern

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	UInt64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
AirlcaCod	String	4 chars	-		ICAO code of the associated airport
Airpolden	String	6 chars	-		Identifier of the associated airport
Point1	GeoCoordinate	x,y,z	-		Position (longitude, latitude, altitude) of airport
AirStoNumb	UInt64	-	-		Storage number of the associated airport
ArcRadius	Float32	-	Nm		Turning radius, inbound to outbound leg, for RNP Holding
Country	CountryEntry	0-336	-	2116	Country where the holding pattern applies
DuplIden	String	6 chars	-	2108	Duplicate identifier
FixCountry	CountryEntry	0-336	-		Country where the fix point is located
FixlcaCod	String	4 chars	-		Fix ICAO Code
FixIdent	String	6 chars	-	2102	Fix identifier
FixRecTyp	FixRecordType	0-8	-	2107	Record type of fix point
FixStoNumb	UInt64	-	-		Fix point storage number
HoldiCours	Float32	+/-180	Deg		Inbound holding course
HoPaTuDire	PathTurnDirection	0-2	-		Holding pattern turn direction
HoldiSpee	UInt32	-	Kts		Holding pattern maximum speed in knots
LegLength	Float32	-	Nm		Leg length in nautical miles
LegTime	Float32	-	Min		Leg time in minutes
MagneCours	MagneticTrueIndication	0-6	-		Indicates if magnetic course
MaximAltit	Sint32	-	Ft		Maximum altitude
MinimAltit	Sint32	-	Ft		Minimum altitude
Name	String	50 chars	-		Name commonly applied to the holding pattern
NavaiCount	CountryEntry	0-336	-		Country of navaid collocated with waypoint
Navaiden	String	6 chars	-		Identifier of navaid collocated with waypoint
NavKeyCod	UInt32	-	-		Key code of navaid collocated with waypoint
NavaidType	NavaidType	0-15	-		Type of navaid collocated with waypoint
ReqNavPerf	Float32	-	Nm		Required navigation performance
TrackDescr	TrackDescription	0-3	-		Defines track geometry for single terminal segment record
Type	HoldingPatternType	0-7	-		Type of holding pattern

6.20 IIs

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	UInt64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
AirlcaCod	String	4 chars	-	2103	ICAO code of the associated airport.
Airpolden	String	6 chars	-	2102	Ident of the associated airport.
AirStoNumb	UInt64	-	-		Storage number of the associated airport.
AppRoulden	String	6 chars	-		Ident of the associated approach route 1.
ApRoStNumb	UInt64	-	-		Storage number of the associated approach route 1.
AppRoulde1	String	6 chars	-		Ident of the associated approach route 2.
ApRoStNum1	UInt64	-	-		Storage number of the associated approach route 2.
AppRoulde2	String	6 chars	-		Ident of the associated approach route 3.
ApRoStNum2	UInt64	-	-		Storage number of the associated approach route 3.
AppRoulde3	String	6 chars	-		Ident of the associated approach route 4.
ApRoStNum3	UInt64	-	-		Storage number of the associated approach route 4.
AppRoulde4	String	6 chars	-		Ident of the associated approach route 5.
ApRoStNum4	UInt64	-	-		Storage number of the associated approach route 5.
BacCouAvai	IIsBackCourse	0-3	-		Back course availability information.
Bearing	Float32	+/-180	Deg		Localizer magnetic bearing.
BeariRefer	MagneticTrueIndication	0-6	-		Bearing reference.
Category	LandingAidCategory	0-9	-		Category/class of the ILS.
Country	CountryEntry	0-336	-	2116	Country where the ILS is located.
Declinatio	Float32	+/-180	Deg		Station declination.
DecliRefer	MagneticTrueIndication	0-6	-		Declination angle reference.
FalGliFla	Logical	Boolean	-		False glidepath flag
FalLocFla	Logical	Boolean	-		False localizer flag
GlideAngl	Float32	+/-180	Deg		Glideslope angle.
GlideBeamw	Float32	+/-180	Deg		Glideslope beamwidth.
GlideFrequ	UInt64		Hz		ILS glideslope frequency.
GliMagVari	Float32	+/-180	Deg		ILS glideslope magnetic variation.
Point3	GeoCoordinate	x,y,z	-		Position (longitude, latitude, altitude) of the glideslope emitter.
GliXOffse	Sint32	-	Ft		Glideslope X offset.
GliYOffse	Sint32	-	Ft		Glideslope Y offset.
Ident	String	6 chars	-		Localizer ICAO ident.
LocalBeamw	Float32	+/-180	Deg		Localizer beamwidth.
LocalFrequ	UInt64	-	Hz	2104	ILS localizer frequency.
LocMagVari	Float32	+/-180	Deg		ILS localizer magnetic variation.
Point2	GeoCoordinate	x,y,z	-		Localizer position (longitude, latitude, altitude).
LocXOffse	Sint32	-	Ft		Localizer X offset.
LocYOffse	Sint32	-	Ft		Localizer Y offset.

Name	String	50 chars	-		Official name of the localizer.
NavStoNumb	UInt64	-	-		Storage number of the associated navaid.
Point1	GeoCoordinate	x,y,z	-		Reference Position (longitude, latitude, altitude)
Runwalden	String	6 chars	-	2111	Ident of the associated runway.
RunStoNumb	UInt64	-	-		Storage number of the associated runway.
SynchTyp	SynchronisationType	0-2	-		Synchronization type.
ThrCroHeig	UInt32	-	Ft		Height above the landing threshold on a normal glidepath.
TrueBearin	Float32	+/-180	Deg		Localizer true bearing.

6.21 Marker

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	UInt64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
Airpolden	String	6 chars	-	2108	Ident of the associated airport/heliport
AirStoNumb	UInt64	-	-		Storage number of the associated airport/heliport
AssocNavai	AssociatedNavaid	0-2	-		Associated navaid information
Channel	String	6 chars	-		Navaid channel.
Country	CountryEntry	0-336	-	2116	Country where the marker is located
Frequency	UInt64		Hz		Frequency
HighLow	MarkerPower	0-2	-		Marker power
IcaoCode	String	4 chars	-	2103	Marker ICAO area code
Ident	String	6 chars	-	2102	Marker ident
IlsBearing	Float32	+/-180	Deg		Bearing of the ILS localizer
IlsBeaRefe	MagneticTrueIndication	0-6	-		Reference for the ILS bearing
LocalIden	String	6 chars	-		Associated localizer ident
LocStoNumb	UInt64	-	-		Associated localizer storage number
Location	Float32	-	Nm		Location from the approach end of the runway
LocatCollo	Logical	Boolean	-		Locator collocation flag
LocatIden	String	6 chars	-		Associated locator ident
LocStoNum1	UInt64	-	-		Associated locator storage number
MagneVaria	Float32	+/-180	Deg		Magnetic variation
MinAxiBear	Float32	+/-180	Deg		True bearing of the marker minor axis
MorseCode	String	3 chars	-		Corresponding letters of the Morse code
Name	String	50 chars	-		Marker official name
NavaiCount	CountryEntry	0-336	-		Navaid country.
NavaiFrequ	UInt64	-	Hz		Frequency
NavKeyCod	UInt32	-	-		Navaid key code.
NavaidType	NavaidType	0-15	-		Navaid type.
Point1	GeoCoordinate	x,y,z	-		Marker position (longitude, latitude, altitude)
Runwalden	String	6 chars	-	2111	Ident of the associated runway
RunStoNumb	UInt64	-	-		Storage number of the associated runway
Type	MarkerType	0-10	-	2107	Marker type

6.22 MilitaryTrainingRoute

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	UInt64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
Country	CountryEntry	0-336	-	2116	Country where the military training route originates
EffecTime	String	100 chars	-		Hours, days and/or dates that military training route is in effect
IcaoCode	String	4 chars	-		ICAO code of air traffic controlling authority where route originates
Ident	String	10 chars	-	2102	Designation of the military training route
OriMilUni	String	100 chars	-		Military unit designated as the originating activity
Point1	GeoCoordinate	x,y,z	-		Reference Position (longitude, latitude, altitude)
Remark	String	Memo	-		Remarks are limited to terrain following ops, special operating proc., flight service stations (100nm radius) & SR remarks
SchMilUni	String	100 chars	-		Military unit responsible for scheduling training route flights
Type	MilitaryRouteType	0-3	-		Type of military training route

6.23 MilitaryTrainingRouteAirspace

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	UInt64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
ActPoIden	String	4 chars	-		Ident of the action point within the military training route
MiTrRolden	String	10 chars	-	2102	Military training route identifier
MiTrRoStNu	UInt64	-	-		Associated military training route storage number
MTROSNumbe	UInt64	-	-		Associated military training route overlay storage number
NeAcPolden	String	4 chars	-		Ident of the next action point within the military training route
Point1	GeoCoordinate	x,y,z	-		Reference Position (longitude, latitude, altitude)
Sector	String	10 chars	-		Designation for the section of the special use airspace
SegmeNumbe	UInt32	-	-	2115	Defines relative position of segment in military training route airspace
SequeNumbe	UInt32	-	-	2120	Defines order of special use airspace (SUAS) or military operations area (MOA) identifiers
SpUsAilden	String	18 chars	-		Special use airspace or military operations area identifier
SpUsAiStNu	UInt64	-	-		Associated special use airspace storage number

6.24 MilitaryTrainingRouteDescription

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	Uint64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
ActPoilden	String	4 chars	-	2108	Ident of the action point within the military training route
AddRouInfo	String	100 chars	-		Info vital to execution of military training route at a specific point to the next point
Bearing	Float32	+/-180	Deg		Bearing from DME or bearing to non-DME navaid
CoWiNaFla	Logical	Boolean	-		Point collocated with navaid flag
Country	CountryEntry	0-336	-		Country where the point is located
CrossAltit	Sint32	-	Ft		Crossing altitude 1
CroAltRefe	AltitudeReference	0-4	-		Crossing altitude 1 reference
CrossAlti1	Sint32	-	Ft		Crossing altitude 2
CroAltRef1	AltitudeReference	0-4	-		Crossing altitude 2 reference
CroAltDesc	RouteAltitudeDescription	0-5	-		Indicates how the crossing altitude(s) should be applied
Distance	Float32	-	Nm		Range from non-DME navaid or slant range from DME
EnrouAltit	Sint32	-	Ft		Enroute altitude 1
EnrAltRefe	AltitudeReference	0-4	-		Enroute altitude 1 reference
EnrouAlti1	Sint32	-	Ft		Enroute altitude 2
EnrAltRef1	AltitudeReference	0-4	-		Enroute altitude 2 reference
EnrAltDesc	RouteAltitudeDescription	0-5	-		Indicates how the enroute altitude(s) should be applied
IcaoCode	String	4 chars	-		ICAO code
MiTrRolden	String	10 chars	-	2102	Military training route identifier
MiTrRoStNu	Uint64	-	-		Associated military training route storage number
NavaiCount	CountryEntry	0-336	-		Navaid country
NavaiIden	String	6 chars	-		Navaid identifier
NavKeyCod	Uint32	-	-		Navaid key code
NavaidType	NavaidType	0-15	-		Navaid type
NeAcPolDen	String	4 chars	-		Ident of next action point within a military training route
PointFunct	PointFunction	0-6	-		Function of the point
Point1	GeoCoordinate	x,y,z	-		Position of point (longitude, latitude, altitude)
RouWidLef	Float32	-	Nm		Route width to left of centerline to the next point
RouWidRigh	Float32	-	Nm		Route width to right of centerline to the next point
TurnDirect	PathTurnDirection	0-2	-		Specific direction in which a turn is to be made
TurnRadius	Float32	-	Nm		Turn radius around a point

6.25 MilitaryTrainingRouteOverlay

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	Uint64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.

AcPoBiSeAn	Float32	+/-180	Deg		Bi-section path angle for the next point based on next segment path (acute angle to that path)
ActPoiFunc	PointFunction	0-6	-		Function of the action point
ActPoIden	String	4 chars	-		Ident of the action point within the military training route
Point1	GeoCoordinate	x,y,z	-		Position (longitude, latitude, altitude) of the action point
AcPoRoWiLe	Float32	-	Nm		Route width to left of action point
AcPoRoWiRi	Float32	-	Nm		Route width to right of action point
AcPoTuDire	PathTurnDirection	0-2	-		Specific direction in which a turn is to be made
AcPoTuRadi	Float32	-	Nm		Turn radius around action point
MiTrRolden	String	10 chars	-	2102	Military training route identifier
MiTrRoStNu	UInt64	-	-		Associated military training route storage number
NAPBSAngl	Float32	+/-180	Deg		Bi-section path angle for the next point based on next segment path (acute angle to that path)
NeAcPoFunc	PointFunction	0-6	-		Function of the next action point
NeAcPolden	String	4 chars	-		Ident of the next action point within the military training route
Point2	GeoCoordinate	x,y,z	-		Position (longitude, latitude, altitude) of the next action point
NAPRWLef	Float32	-	Nm		Route width to left of the next action point
NAPRWRigh	Float32	-	Nm		Route width to right of the next action point
NeAcPoTuDi	PathTurnDirection	0-2	-		Specific direction in which a turn is to be made
NeAcPoTuRa	Float32	-	Nm		Turn radius around the next action point
SegmeNumbe	UInt32	-	-	2115	Defines relative position of segment in military training route overlay

6.26 MIs

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	UInt64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
AirlcaCod	String	4 chars	-	2103	Icao code of the associated airport
Airpolden	String	6 chars	-	2102	Ident of the associated airport
AirStoNumb	UInt64	-	-		Storage number of the associated airport
AzimuBeari	Float32	+/-180	Deg		Magnetic bearing of the MLS azimuth
AziLefAngl	Float32	+/-180	Deg		Azimuth proportional left angle
AziLefCove	Sint32	+/-180	Deg		Azimuth left coverage
Point1	GeoCoordinate	x,y,z	-		Position (longitude, latitude, altitude) of the MLS azimuth transmitter
AziRigAngl	Float32	+/-180	Deg		Azimuth proportional right angle
AziRigCove	Sint32	+/-180	Deg		Azimuth right coverage
AziTruBear	Float32	+/-180	Deg		Azimuth true bearing in degrees
AziXOffse	Float32	-	Ft		Azimuth X offset
AziYOffse	Float32	-	Ft		Azimuth Y offset
BacAziBear	Float32	+/-180	Deg		Magnetic bearing of the MLS back azimuth
BaAzLeAngl	Float32	+/-180	Deg		Back azimuth proportional left angle
BaAzLeCove	Sint32	+/-180	Deg		Back azimuth left coverage
Point2	GeoCoordinate	x,y,z	-		Position (longitude, latitude, altitude) of the MLS back azimuth transmitter
BaAzRiAngl	Float32	+/-180	Deg		Back azimuth proportional right angle
BaAzRiCove	Sint32	+/-180	Deg		Back azimuth right coverage
BaAzTrBear	Float32	+/-180	Deg		Back azimuth true bearing in degrees
BaAzXOffse	Float32	-	Ft		Back azimuth X offset
BaAzYOffse	Float32	-	Ft		Back azimuth Y offset
Category	LandingAidCategory	0-9	-		Category/class of the MLS
Channel	String	6 chars	-	2110	Assigned channel
Collocatio	MIsCollocation	0-3	-		MLS collocation information
Country	CountryEntry	0-336	-	2116	Country where the MLS is located
Point3	GeoCoordinate	x,y,z	-		MLS Datum point position (longitude, latitude, altitude)
DaPoXOffse	Float32	-	Ft		Datum point X offset
DaPoYOffse	Float32	-	Ft		Datum point Y offset
EleAngSpa	Float32	+/-180	Deg		Elevation angle span
EleMinAngl	Float32	+/-180	Deg		Elevation minimum angle
EleNomAngl	Float32	+/-180	Deg		Elevation nominal angle
Point4	GeoCoordinate	x,y,z	-		Elevation position (longitude, latitude, altitude)
EleXOffse	Float32	-	Ft		Elevation X offset
EleYOffse	Float32	-	Ft		Elevation Y offset
Frequency	UInt64	-	Hz	2104	Frequency
HigRatAppr	Logical	Boolean	-		MLS high rate approach available
Ident	String	6 chars	-		MLS ICAO ident

MagneVaria	Float32	+/-180	Deg		Magnetic variation
Name	String	50 chars	-		Official name of the MLS
Runwalden	String	6 chars	-	2111	Ident of the associated runway
RunStoNumb	UInt64	-	-		Storage number of the associated runway
SynchTyp	SynchronizationType	0-2	-		Synchronization Type
ThrCroHeig	UInt32	-	Ft		Height above the landing threshold on a normal glidepath

6.27 Msa

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	UInt64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
AirlcaCod	String	4 chars	-		Airport/Heliport ICAO Code
Airpolden	String	6 chars	-	2108	Airport/Heliport Ident
AirStoNumb	UInt64	-	-		Airport/Heliport Storage Number
Country	CountryEntry	0-336	-	2116	Country where the MSA applies
IcaoCode	String	4 chars	-		MSA ICAO Code
MagTruIndi	MagneticTrueIndication	0-6	-		Magnetic/True Indication
MsaCenter	String	6 chars	-	2102	MSA Center
MsCeFiStNu	UInt64	-	-		MSA Center Fix Storage Number
MsaCenTyp	FixRecordType	0-8	-	2107	MSA Center Type
MultiCod	String	2 chars	-	2118	Multiple Code
NavKeyCod	UInt32	2 chars	-		Navaid key code if MSA center is a navaid
NavaidType	NavaidType	0-15	-		Navaid type if MSA center is a navaid
Point1	GeoCoordinate	x,y,z	-		Position (longitude, latitude, altitude) of the MSA center fix
RoutIdent	String	50 chars	-	2111	Identifier of the terminal procedure associated with MSA
RouteType	RouteType	0-4	-		Type of terminal procedure associated with MSA
SectoAltit	UInt32	-	Ft		Sector Altitude
SecEndBear	UInt32	0-359	Deg		Sector End Bearing
SecEndRadi	UInt32	-	Nm		Sector Radius
SecStaBear	UInt32	0-359	Deg		Sector Start Bearing
SecStaRadi	UInt32	-	Nm		Sector Start Radius
SectoAlti1	UInt32	-	Ft		Sector Altitude
SecEndBea1	UInt32	0-359	Deg		Sector End Bearing
SectoRadiu	UInt32	-	Nm		Sector Radius
SecStaBea1	UInt32	0-359	Deg		Sector Start Bearing
SectoAlti2	UInt32	-	Ft		Sector Altitude
SecEndBea2	UInt32	0-359	Deg		Sector End Bearing
SectoRadi1	UInt32	-	Nm		Sector Radius
SecStaBea2	UInt32	0-359	Deg		Sector Start Bearing
SectoAlti3	UInt32	-	Ft		Sector Altitude
SecEndBea3	UInt32	0-359	Deg		Sector End Bearing
SectoRadi2	UInt32	-	Nm		Sector Radius
SecStaBea3	UInt32	0-359	Deg		Sector Start Bearing
SectoAlti4	UInt32	-	Ft		Sector Altitude
SecEndBea4	UInt32	0-359	Deg		Sector End Bearing
SectoRadi3	UInt32	-	Nm		Sector Radius
SecStaBea4	UInt32	0-359	Deg		Sector Start Bearing
SectoAlti5	UInt32	-	Ft		Sector Altitude
SecEndBea5	UInt32	0-359	Deg		Sector End Bearing

SectoRadi4	Uint32	-	Nm		Sector Radius
SecStaBea5	Uint32	0-359	Deg		Sector Start Bearing
SectoAlti6	Uint32	-	Ft		Sector Altitude
SecEndBea6	Uint32	0-359	Deg		Sector End Bearing
SectoRadi5	Uint32	-	Nm		Sector Radius
SecStaBea6	Uint32	0-359	Deg		Sector Start Bearing

6.28 Navaid

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	Uint64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
AirlcaCod	String	4 chars	-		ICAO code of the associated airport/heliport
Airpolden	String	6 chars	-	2108	Ident of the associated airport/heliport
AirStoNumb	Uint64	-	-		Storage number of the associated airport/heliport
AsCoStNumb	Uint64	-	-		Associated Comms record storage number
AssMarTyp	AssociatedMarkerType	0-4	-		Associated marker type
BfoOperati	Logical	Boolean	-		BFO operation flag
BiasedIls	Logical	Boolean	-		Biased ILS flag
Channel	String	6 chars	-	2110	Assigned channel
Collocatio	NavaidCollocation	0-8	-		Navaid collocation information
CompoTyp	ComponentType	0-10	-		Component type (e.g.: DME, locator, etc.)
Country	CountryEntry	0-336	-	2116	Country where the navaid is located
Declinatio	Float32	+/-180	Deg		Station declination
DecliRefer	MagneticTrueIndication	0-6	-		Magnetic, True, or other (grid direction)
Dmeldent	String	6 chars	-		DME identifier
DmeOffset	Float32		Nm		DME offset
Point2	GeoCoordinate	x,y,z	-		DME position (longitude, latitude, altitude)
EmissTyp	EmissionType	0-3	-		Emission type (A0, A1 or A2)
Frequency	Uint64	-	Hz	2104	Navaid frequency
FreProAlti	Uint32	-	Ft		Frequency protection altitude
FreProDist	Uint32	-	Nm		Frequency protection distance
IcaoCode	String	4 chars	-	2103	Navaid ICAO area code
Ident	String	6 chars	-	2102	Navaid ICAO Ident
KeyCode	Uint32	-	-	2118	Distinguish between same type navaid with same ident and country
LocalBeari	Float32	+/-180	Deg		Localizer bearing
LocBeaRefe	MagneticTrueIndication	0-6	-		Magnetic, True, or other (grid direction)
LocalWidt	Float32	+/-180	Deg		Localizer width
MagneVaria	Float32	+/-180	Deg		Magnetic variation
Modulation	SignalModulation	0-2	-		Modulation (400Hz or 1020Hz)
Name	String	45 chars	-		Navaid official name
NexNavDist	Uint32	-	Nm		Distance to the next navaid

Point1	GeoCoordinate	x,y,z	-		Position (longitude, latitude, altitude) of the NavObject
Power	Uint32	-	Watt		Navaid power capacity
PreciDm	Logical	Boolean	-		Precision vs non-precision DME
RadClaCod	RadioClassCode	0-7	-		Navaid radio class code
Range	Uint32	-	Nm		Navaid power capacity
RangeRelia	RangeReliability	0-10	-		Navaid range reliability
RepetRat	Uint32	-	1/min		NDB repetition rate [number of occurrences per minute]
RunwaDista	Float32	-	Nm		Distance to associated runway
Runwalden	String	6 chars	-		Associated runway identifier
State	StateEntry	0-51	-		State or province name where the navaid is located
Status	NavaidStatus	0-3	-		Navaid status
SynchTyp	SynchronisationType	0-2	-		Navaid synchronization type
ThrCroHeig	Uint32	-	Ft		Threshold crossing height
Type	NavaidType	0-15	-	2107	Navaid type
VhfNavaid	Logical	Boolean	-	2122	Flag indicating if navaid is a VHF navaid.
VoldFiPat	String	30 chars	-		Voice identifier file name and path
VoildePres	Logical	Boolean	-		Voice identifier present flag
VoiOnFrequ	Logical	Boolean	-		Voice on frequency presence flag
VoOnFrFil	String	30 chars	-		Voice on frequency file link
WeathBroad	WeatherBroadcast	0-2	-		Weather broadcast information
WeaBroFil	String	30 chars	-		Weather broadcast file link

6.29 Off Route Terrain Clearance Altitude

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	Uint64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
AlterIden	String	8 chars		2108	Alternate OffRouteTerrainClearanceAlt identifier
Altitude	Uint32	-	Ft		Altitude: 1000ft clearance in non-mountainous & 2000ft in mountainous areas of US and 3000ft clearance for NIMA products.
Ident	String	8 chars	-	2102	OffRouteTerrainClearanceAlt identifier
Point2	GeoCoordinate	x,y,z	-		North east corner (longitude, latitude, altitude) of the cell in which altitude applies
Point1	GeoCoordinate	x,y,z	-		North west corner (longitude, latitude, altitude) of the cell in which altitude applies
Point3	GeoCoordinate	x,y,z	-		South east corner (longitude, latitude, altitude) of the cell in which altitude applies
Point4	GeoCoordinate	x,y,z	-		South west corner (longitude, latitude, altitude) of the cell in which altitude applies

6.30 ParachuteJumpArea

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumber	UInt64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
AltitRefer	AltitudeReference	0-4	-		Altitude reference (eg: AMSL, AGL, etc.)
Country	CountryEntry	0-336	-	2116	Country where the parachute jump area is located
EffecAltit	Sint32	-	Ft		Altitude for which the area is effective
EffecTim	String	50 chars	-		Indicates hours, dates, or condition of operation
IcaoCode	String	4 chars	-		ICAO region code
Ident	String	8 chars	-	2102	DAFIF parachute jump area identifier
Name	String	50 chars	-		Official name assigned to the jump area
OperaHour	String	20 chars	-		Actual hours of operation
OperaTim	String	95 chars	-		Operating times of the area
Point1	GeoCoordinate	x,y,z	-		Reference Position (longitude, latitude, altitude)
StateName	StateEntry	0-51	-		State or province where the jump area is located

6.31 ParachuteJumpAreaBoundary

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	Uint64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
ArcSegDeri	ArcSegmentDerivation	0-3	-		Indicates how the arc segment is defined
Bearing1	Float32	+/-180	Deg		Bearing from navigational aid to designated area
Bearing2	Float32	+/-180	Deg		Bearing from navigational aid to designated area
BoundShap	BoundaryShape	0-8	-		Type of area point being plotted by positions, radii, etc.
Point2	GeoCoordinate	x,y,z	-		Position (longitude, latitude, altitude) of circle or arc center
Country	CountryEntry	0-336	-	2116	Country in which boundary segment is located
Distance1	Float32	-	Nm		Distance from navigational aid to the designated area
Distance2	Float32	-	Nm		Distance from navigational aid to the designated area
IcaoCode	String	4 chars	-		ICAO code
Ident	String	8	-	2102	DAFIF parachute jump area identifier
NavaiCount	CountryEntry	0-336	-		Country where the navaid is located
Navailden	String	6 chars	-		Navaid identifier
NavKeyCod	Uint32	-	-		Navaid key code
Point3	GeoCoordinate	x,y,z	-		Navaid position (longitude, latitude, altitude)
NavStoNumb	Uint64	-	-		Associated navaid storage number
NavaidType	NavaidType	0-15	-		Navaid type
PaJuArStNu	Uint64	-	-		Storage number of associated ParachuteJumpArea record
Radius1	Float32	-	Nm		Radius of arc or circle from the center position
Radius2	Float32	-	Nm		Radius of arc or circle from the center position
Point1	GeoCoordinate	x,y,z	-		Reference Position (longitude, latitude, altitude)
Point4	GeoCoordinate	x,y,z	-		Position (longitude, latitude, altitude) of the segment end position
Point5	GeoCoordinate	x,y,z	-		Position (longitude, latitude, altitude) of the segment start position
SequeNumbe	Uint32	-	-	2115	Sequence number
Type	ParachuteJumpAreaType	0-7	-		Parachute jump area boundary type

6.32 PathPoint

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	UInt64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
Airpolden	String	6 chars	-	2102	Associated airport/heliport identifier
AirStoNumb	UInt64	-	-		Associated airport/heliport storage number
AppPerDesi	ApproachPerformance	0-0	-		Indicates the category type of the approach (APD)
AppRoulden	String	6 chars	-		Identifier of the approach route to be flown
AppSegTyp	ApproachSegmentType	0-1	-		Type of the final approach segment (operations type)
Country	CountryEntry	0-336	-	2116	Country in which the airport/heliport is located
FIPaAIEIHe	Sint32	-	Ft		Surveyed height in reference to WGS-84 ellipsoid
FIPaAIORHe	Sint32	-	Ft		Surveyed height in reference to Mean Sea Level (MSL)
Point2	GeoCoordinate	x,y,z	-		Flight path alignment point (FPAP) position (longitude, latitude, altitude)
GlideAngl	Float32	+/-180	Deg		Intended descent angle for final approach flight path
IcaoCode	String	4 chars	-		ICAO code for the airport/heliport
LaThEIHeig	Sint32	-	Ft		Surveyed height in reference to WGS-84 ellipsoid
LaThOrHeig	Sint32	-	Ft		Surveyed height in reference to Mean Sea Level (MSL)
Point1	GeoCoordinate	x,y,z	-		Landing threshold point (LTP) position (longitude, latitude, altitude)
LengtOffse	UInt32	-	Ft		Distance from stop end of runway (SER) to the FPAP
RePaDaSele	PathDataSelector	0-0	-		Reference path data selector enables automatic tuning of a procedure by Ground Based Augmentation Systems (GBAS) avionics
RefPatIden	String	6 chars	-		Ident to confirm selection of correct approach procedure
RoutelIndic	String	25 chars	-		Differentiates between multiple final approach segments to the same runway or helipad (single alpha character)
Runwalden	String	6 chars	-		Associated runway/helipad identifier
ServiProvi	ServiceProvider	0-0	-		Associates approach procedure to a particular Satellite Based Approach System (SBAS) service provider
ThrCouWidt	Float32	-	Ft		Width of lateral course at Landing Threshold Point
ThrCroHeig	UInt32	6	Ft		Height above landing threshold on a normal glidepath

6.33 PreferredRoute

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	UInt64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
AircrGrou	AircraftGroup	0-21	-		Types of aircrafts permitted to use the route
AirwaLeve	AirwayLevel	0-3	-		Airway level (high, low, or both)
AIROAiGrou	AircraftGroup	0-21	-		Types of aircrafts permitted to use the alternate route
AltitDescr	AltitudeDescription	0-13	-		Description of how segment altitude limits should be applied
DirecRestr	DirectionRestriction	0-3	-		Direction restriction (forward, backward, either)
EffecTime	String	50 chars	-		Period during which preferred route is effective
EffecTime1	String	50 chars	-		Period during which preferred route is effective
EffecTime2	String	50 chars	-		Period during which preferred route is effective
FixCountry	CountryEntry	0-336	-	2116	Country where the fix point is located
FixlcaCod	String	4 chars	-		ICAO code of fix point
FixIdent	String	30 chars	-		Fix identifier (may be name if ident not available)
FiNaKeCod	UInt32	-	-		Key code of fix point for navaid fix
FixPoiTyp	FixPointType	0-19	-		Fix point type for navaid and ATS fixes
FiPoReTyp	FixPointRecordType	0-13	-		Fix record type
FixStoNumb	UInt64	-	-		Fix storage number
Ident	String	8 chars	-	2102	Route identifier
InFilcCod	String	4 chars	-		ICAO code of the initial fix point
IniFixIden	String	6 chars	-		Identifier of departure airport or initial fix of the route
IniFixNam	String	50 chars	-		Name of the initial fix point
InFiReTyp	FixRecordType	0-8	-		Initial fix record type
InFiStNumb	UInt64	-	-		Storage number of the associated initial fix point
MaxRouAlti	Sint32	-	Ft		Maximum altitude limit for route
MaSpLiFla	Logical	Boolean	-		Speed limit represents maximum speed allowed (FALSE - min speed)
MinRouAlti	Sint32	-	Ft		Minimum altitude limit for route
Point1	GeoCoordinate	x,y,z	-		Position (longitude, latitude, altitude) of fix point
RefRoulden	String	6 chars	-		Reference route identifier (route to be flown)
RnaReqFla	Logical	Boolean	-		RNAV equipment required flag
RouteUse	RouteUse	0-2	-		Route use (point-to-point or area-to-area)
RoutiTyp	RoutingType	0-7	-		Type of reference route
SegAltLimi	Sint32	-	Ft		Segment altitude limit 1
SegAltLim1	Sint32	-	Ft		Segment altitude limit 2
SequeNumbe	UInt32	-	-		Sequence number
SpeedLimit	UInt32	-	Kts		Speed limit for the route
TeFilcCod	String	4 chars	-		ICAO code of the terminal fix point
TerFixIden	String	6 chars	-		Identifier of arrival airport or terminal fix of the route
TerFixNam	String	50 chars	-		Name of the terminal fix point
TeFiReTyp	FixRecordType	0-8	-		Terminal fix record type

TeFiStNumb	Uint64	-	-	Storage number of the associated terminal fix point
TimeCode	PrimaryTimeCode	0-4	-	Describes continuity of time of applicability
Type	PreferredRouteType	0-9	-	Preferred route type

6.34 Preset Site

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumber	UInt64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
AirTruBearing	Float32	0-360	Deg		True bearing of aircraft at the preset site
Airpolden	String	6 chars	-	2108	Identifier of the associated airport
AirStoNumber	UInt64	-	-		Storage number of the associated airport
Ident	String	32 chars	-	2102	PresetSite identifier
Point1	GeoCoordinate	x,y,z	-		Preset site position (longitude, latitude, altitude)
Runwalden	String	6 chars	-		Ident of the associated runway
RunStoNumber	UInt64	-	-		Storage number of the associated runway
SegmentNumber	UInt32	-	-		The segment number of the preset site, if it belongs to a segment group
Type	PresetSiteType	0-8	-		Type of preset site

6.35 RestrictiveAirspace

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	UInt64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
AirspDesig	String	6 chars	-	2102	Restrictive airspace designation
AirResTyp	AirspaceRestrictionType	0-9	-		Restrictive airspace type
ArcBearing	Float32	+/-180	Deg		Arc bearing
ArcDistanc	Float32	-	Nm		Arc distance
ArcDistan1	Float32	-	Nm		Arc distance (radius of arc from center point)
Point3	GeoCoordinate	x,y,z	-		Arc origin position (longitude, latitude, altitude)
ArcSegDeri	ArcSegmentDerivation	0-3	-		Indicates how the arc segment is defined
Bearing1	Float32	+/-180	Deg		True bearing from arc origin or navaid
Bearing2	Float32	+/-180	Deg		True bearing from arc origin or navaid
BoundEn	Logical	Boolean	-		End of boundary description - return to origin point
BoundShap	BoundaryShape	0-8	-		Boundary shape type
Country	CountryEntry	0-336	-	2116	Country where airspace is located
IcaoCode	String	4 chars	-		ICAO code for the airspace
Level	AirwayLevel	0-3	-		Type of airway (high, low, or either)
LowerLimit	Sint32	-	Ft		Lower limit
LoLiAIRefe	AltitudeReference	0-4	-		Altitude reference
MultiCod	String	2 chars	-		Differentiate between airspaces with same designator
Name	String	50 chars	-		Restrictive airspace name
NavaiCount	CountryEntry	0-336	-		Country in which navaid is located
Navaiden	String	6 chars	-		Navaid identifier
NavKeyCod	UInt32	-	-		Distinguish between same type navaid with same ident and country
NavaidType	NavaidType	0-15	-		Navaid type
Notam	Logical	Boolean	-		Active times by NOTAM
Point2	GeoCoordinate	x,y,z	-		Position (longitude, latitude, altitude)
Point1	GeoCoordinate	x,y,z	-		Reference Position (longitude, latitude, altitude)
Sector	String	100 chars	-	2117	Designation for the section of the airspace
SequeNumbe	UInt32	-	-		Sequence number
SpUsAiStNu	UInt64	-	-		Associated SpecialUseAirspace storage number
TimeCode	PrimaryTimeCode	0-4	-		Time codes for primary records
UpperLimit	Sint32	-	Ft		Upper limit
UpLiAIRefe	AltitudeReference	0-4	-		Reference for upper limit altitude

6.36 Runway

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	UInt64	-	-	2101	Storage number.

AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
AirIcaCod	String	4 chars	-	2103	Associated Airport ICAO code.
Airpolden	String	6 chars	-	2108	Associated Airport identifier.
AirStoNumb	UInt64	-	-		Associated Airport storage number.
Point1	GeoCoordinate	x,y,z	-		Position (longitude, latitude, altitude) of the runway approach end.
Bearing	Float32	+/-180	Deg		Magnetic bearing.
CeLiLiFla	Logical	Boolean	-		Indicates presence of lights on center line.
ClosedFlag	Logical	Boolean	-		Indicates if the runway is closed or unusable.
Country	CountryEntry	0-336	-	2116	Runway country.
Descriptio	String	memo	-		Runway description.
DisThrDist	UInt32	-	Ft		Distance between the beginning of the runway and the displaced threshold.
Point2	GeoCoordinate	x,y,z	-		Position (longitude, latitude, altitude) of the displaced threshold (latitude, longitude, elevation).
Ident	String	6 chars	-	2102	Runway identifier.
LanAidCate	LandingAidCategory	0-9	-		Category of the primary landing aid (ILS, MLS, GLS).
LanAidIden	String	6 chars	-		Primary landing aid (ILS, MLS or GLS) identifier.
LandiDista	UInt32	-	Ft		Landing distance available.
Length	UInt32	-	Ft		Runway length.
LightSyste	LightingSystem	0-64	-		Lighting system 1.
LightSyst1	LightingSystem	0-64	-		Lighting system 2.
LightSyst2	LightingSystem	0-64	-		Lighting system 3.
LightSyst3	LightingSystem	0-64	-		Lighting system 4.
LightSyst4	LightingSystem	0-64	-		Lighting system 5.
LightSyst5	LightingSystem	0-64	-		Lighting system 6.
LightSyst6	LightingSystem	0-64	-		Lighting system 7.
LightSyst7	LightingSystem	0-64	-		Lighting system 8.
MaxTirPres	MaximumTirePressure	0-4	Psi		Maximum tire pressure authorized.
PavemClass	UInt32	-	-		Pavement classification number.
PavEvaMeth	PavementEvaluationMethod	0-2	-		Pavement evaluation method.
PavSubCate	PavementSubgradeCategory	0-4	-		Pavement subgrade category.
PavemTyp	PavementType	0-3	-		Type of pavement.
SeLaAiCate	LandingAidCategory	0-9	-		Category of the second landing aid (ILS, MLS, GLS).
SeLaAIden	String	6 chars	-		Second landing aid (ILS, MLS or GLS) identifier.
Slope	Float32	-	%		Runway gradient.
Point3	GeoCoordinate	x,y,z	-		Position (longitude, latitude, elevation) of the runway stop end.
StopwLengt	UInt32	-	Ft		Length of the area beyond the takeoff runway.
StoSurTyp	RunwaySurfaceType	0-21	-		Stopway surface type.
SurfaTyp	RunwaySurfaceType	0-21	-		Runway surface type.
TakeoDista	UInt32	-	Ft		Takeoff distance available.
ThrCroHeig	UInt32	-	Ft		Height above the landing threshold on a normal glidepath.
TouZonElev	Float32	-	Ft		Highest elevation in the first 3000 ft of landing surface.
TrueBearin	Float32	+/-180	Deg		Runway true bearing.

TruNorRefe	Logical	Boolean	-		True North reference flag.
Width	Uint32	-	Ft		Runway width.

6.37 Sid

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	Uint64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
AirStoNumb	Uint64	-	-		Airport storage number
Altitude1	Sint32	-	Ft		First altitude limit
AltitTyp	AltitudeType	0-4	-		Altitude 1 type
Altitude2	Sint32	-	Ft		Second altitude limit
AltitTyp1	AltitudeType	0-4	-		Altitude 2 type
AltitDescr	AltitudeDescription	0-13	-		Altitude description
ArcRadius	Float32	-	Nm		Arc radius
CenterFix	String	10 chars	-		Point which defines the center of the arc flight path
CeFilcCod	String	4 chars	-		ICAO code of the center fix
Country	CountryEntry	0-336	-	2116	Country associated with the terminal procedure
Course	Float32	+/-180	Deg		Outbound course from waypoint in fix ident
FixDetails	FixDetails	0-9	-		Fix details
FixFunctio	FixFunction	0-7	-		Fix function
FixlcaCod	String	4 chars	-		ICAO code of the fix point
FixIdent	String	10 chars	-		Fix identifier
FlyOveTyp	FlyOverType	0-4	-		Fly over type
MagCouIndi	MagneticTrueIndication	0-6	-		Indicates if the course provided is magnetic course
NavaiCount	CountryEntry	0-336	-		Country where recommended navaid 1 is located
Point2	GeoCoordinate	x,y,z	-		Navaid 1 DME position (longitude, latitude, altitude)
NavKeyCod	Uint32	-	-		Distinguish between navaid of same type with same ident in same country
NavMagVari	Float32	+/-180	Deg		Recommended navaid 1 magnetic variation
Point3	GeoCoordinate	x,y,z	-		Navaid 1 position (longitude, latitude, altitude)
NavaiTyp	SegmentNavaidType	0-13	-		Recommended navaid 1 type
NavaiCoun1	CountryEntry	0-336	-		Country where recommended navaid 2 is located
Point4	GeoCoordinate	x,y,z	-		Navaid 2 DME position (longitude, latitude, altitude)
NavKeyCod1	Uint32	-	-		Distinguish between navaid of same type with same ident in same country
NavMagVar1	Float32	+/-180	Deg		Recommended navaid 2 magnetic variation
Point5	GeoCoordinate	x,y,z	-		Navaid 2 position (longitude, latitude, altitude)
NavaiTyp1	SegmentNavaidType	0-13	-		Recommended navaid 2 type
PathTermin	PathTermination	0-23	-		Path and Termination
ReNalcCod	String	4 chars	-		ICAO code of the recommended navaid 1
RecNavIden	String	10 chars	-		Recommended navaid identifier 1
RecNavIde1	String	10 chars	-		Recommended navaid identifier 2
ReqNavPerf	Float32	-	Nm		Required navigation performance
RouteDista	Float32	-	Nm		Distance in nautical miles from waypoint in fix ident
RouteType	RouteType	0-4	-		Termination Procedure Type
SpeAirCate	AircraftCategory	0-4	-		Aircraft category that speed limit 1 applies to

SpeedAltit	Sint32	-	Ft		Altitude where speed limit 1 applies
SpeedLimit	Uint32	-	Kts		Speed limit 1
SpeAirCat1	AircraftCategory	0-4	-		Aircraft category that speed limit 2 applies to
SpeedAlti1	Sint32	-	Ft		Altitude where speed limit 2 applies
SpeedLimi1	Uint32	-	Kts		Speed limit 2
SuTeDaStNu	Uint64	-	-		Storage number of associated Supplemental Terminal Data record
ThrCroHeig	Uint32	-	Ft		Threshold crossing height
TransAltit	Sint32	-	Ft		Transition altitude
TurnDirect	TurnDirection	0-3	-		Turn direction
TurDirVali	Logical	Boolean	-		Turn direction valid
WaypoCount	CountryEntry	0-336	-		Waypoint country
WaypoDescr	WaypointDescription	0-15	-		Waypoint description
WaypoDista	Float32	-	Nm		Nautical miles between fix point and recommended navaid 1 (RHO)
WaypoDist1	Float32	-	Nm		Nautical miles between fix point and recommended navaid 2
WayMagBear	Float32	+/-180	Deg		Magnetic bearing between fix point and recommended navaid 1 (THETA)
WayMagBea1	Float32	+/-180	Deg		Magnetic bearing between fix point and recommended navaid 2
WayMagVari	Float32	+/-180	Deg		Waypoint magnetic variation
Point1	GeoCoordinate	x,y,z	-		Waypoint position (longitude, latitude, altitude)
AirIcaCod	String	4 chars	-		ICAO code of the associated airport
Airpolden	String	6 chars	-	2102	Identifier of the associated airport
Ident	String	8 chars	-	2108	SID/STAR/Approach identifier
SequeNumbe	Uint32	-	-		Sequence number
SidRouTyp	SidRouteType	0-12	-		SID route type
TransIden	String	60 chars	-		Transition identifier

6.38 Special Use Airspace

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	Uint64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
AirwaLeve	AirwayLevel	0-3	-		Airspace structure in which boundary is effective (high/low)
ComCalSig	String	50 chars	-	2111	Call sign of the communications facilities
ContrAgenc	String	60 chars	-		Office responsible for air traffic within airspace
Country1	CountryEntry	0-336	-	2116	Country in which the special use airspace is located
Country2	CountryEntry	0-336	-		Country in which the special use airspace is located
Country3	CountryEntry	0-336	-		Country in which the special use airspace is located
Country4	CountryEntry	0-336	-		Country in which the special use airspace is located
EffecDat	String	12 chars	-		Effective date of the special use airspace
EffecTim	String	50 chars	-		Times at which given airspace iWs to be in effect
Frequency1	Uint64	-	Hz		Frequency for communicating with identified facility
Frequency2	Uint64	-	Hz		Frequency 2 used for communicating with identified facility
IcaoCode	String	4 chars	-		ICAO code of the special use airspace

Ident	String	6 chars	-	2102	ICAO ident of special use airspace
LowEffAlti	Sint32	-	Ft		Lower vertical limit of the given airspace
LoEfAlRefe	AltitudeReference	0-4	-		Lower effective altitude reference
Name	String	50 chars	-		Official name of the special use airspace
Point1	GeoCoordinate	x,y,z	-		Reference Position (longitude, latitude, altitude)
Remark	String	memo	-		Essential information related to the given special use airspace
Sector	String	2 chars	-	2117	Designation for the section of the special use airspace
Type	AirspaceRestrictionType	0-9	-		Special use airspace type
UppEffAlti	Sint32	-	Ft		Upper vertical limit of the given airspace
UpEfAlRefe	AltitudeReference	0-4	-		Upper effective altitude reference
WeathCondi	WeatherCondition	0-7	-		Meteorological conditions in which the airspace can be used

6.39 Star

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	Uint64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
AirStoNumb	Uint64	-	-		Airport storage number
Altitude1	Sint32	-	Ft		First altitude limit
AltitTyp	AltitudeType	0-4	-		Altitude 1 type
Altitude2	Sint32	-	Ft		Second altitude limit
AltitTyp1	AltitudeType	0-4	-		Altitude 2 type
AltitDescr	AltitudeDescription	0-13	-		Altitude description
ArcRadius	Float32	-	Nm		Arc radius
CenterFix	String	10 chars	-		Point which defines the center of the arc flight path
CeFilcCod	String	4 chars	-		ICAO code of the center fix
Country	CountryEntry	0-336	-	2116	Country associated with the terminal procedure
Course	Float32	+/-180	Deg		Outbound course from waypoint in fix ident
FixDetails	FixDetails	0-9	-		Fix details
FixFunctio	FixFunction	0-7	-		Fix function
FixlcaCod	String	4 chars	-		ICAO code of the fix point
FixIdent	String	10 chars	-		Fix identifier
FlyOveTyp	FlyOverType	0-4	-		Fly over type
MagCoulndi	MagneticTrueIndication	0-6	-		Indicates if the course provided is magnetic course
NavaiCount	CountryEntry	0-336	-		Country where recommended navaid 1 is located
Point2	GeoCoordinate	x,y,z	-		Navaid 1 DME position (longitude, latitude, altitude)
NavKeyCod	Uint32	-	-		Distinguish between navaid of same type with same ident in same country
NavMagVari	Float32	+/-180	Deg		Recommended navaid 1 magnetic variation
Point3	GeoCoordinate	x,y,z	-	A	Navaid 1 position (longitude, latitude, altitude)
NavaiTyp	SegmentNavaidType	0-13	-		Recommended navaid 1 type
NavaiCoun1	CountryEntry	0-336	-		Country where recommended navaid 2 is located
Point4	GeoCoordinate	x,y,z	-		Navaid 2 DME position (longitude, latitude, altitude)
NavKeyCod1	Uint32	-	-		Distinguish between navaid of same type with same ident in same country
NavMagVar1	Float32	+/-180	Deg		Recommended navaid 2 magnetic variation
Point5	GeoCoordinate	x,y,z	-		Navaid 2 position (longitude, latitude, altitude)
NavaiTyp1	SegmentNavaidType	0-13	-		Recommended navaid 2 type
PathTermin	PathTermination	0-23	-		Path and Termination
ReNalcCod	String	4 chars	-		ICAO code of the recommended navaid 1
RecNavIden	String	10 chars	-		Recommended navaid identifier 1
RecNavIde1	String	10 chars	-		Recommended navaid identifier 2
ReqNavPerf	Float32	-	Nm		Required navigation performance
RouteDista	Float32	-	Nm		Distance in nautical miles from waypoint in fix ident
RouteType	RouteType	0-4	-		Termination Procedure Type

SpeAirCate	AircraftCategory	0-4	-		Aircraft category that speed limit 1 applies to
WWSpeedAltit	Sint32	-	Ft		Altitude where speed limit 1 applies
SpeedLimit	Uint32	-	Kts		Speed limit 1
SpeAirCat1	AircraftCategory	0-4	-		Aircraft category that speed limit 2 applies to
SpeedAlti1	Sint32	-	Ft		Altitude where speed limit 2 applies
SpeedLimi1	Uint32	-	Kts		Speed limit 2
SuTeDaStNu	Uint64	-	-		Storage number of associated Supplemental Terminal Data record
ThrCroHeig	Uint32	-	Ft		Threshold crossing height
TransAltit	Sint32	-	Ft		Transition altitude
TurnDirect	TurnDirection	0-3	-		Turn direction
TurDirVali	Logical	Boolean	-		Turn direction valid
WaypoCount	CountryEntry	0-336	-		Waypoint country
WaypoDescr	WaypointDescription	0-15	-		Waypoint description
WaypoDista	Float32	-	Nm		Nautical miles between fix point and recommended navaid 1 (RHO)
WaypoDist1	Float32	-	Nm		Nautical miles between fix point and recommended navaid 2
WayMagBear	Float32	+/-180	Deg		Magnetic bearing between fix point and recommended navaid 1 (THETA)
WayMagBea1	Float32	+/-180	Deg		Magnetic bearing between fix point and recommended navaid 2
WayMagVari	Float32	+/-180	Deg		Waypoint magnetic variation
Point1	GeoCoordinate	x,y,z	-		Waypoint position (longitude, latitude, altitude)
AirlcaCod	String	4 chars	-		ICAO code of the associated airport
Airpolden	String	6 chars	-	2102	Identifier of the associated airport
Ident	String	8 chars	-	2108	SID/STAR/Approach identifier
SequeNumbe	Uint32	-	-		Sequence number
StaRouTyp	StarRouteType	0-12	-		STAR route type
TransIden	String	6 chars	-		Transition identifier
VertiAngl	Float32	+/-180	Deg		Descent angle for the procedure

6.40 Supplemental Terminal Data

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	UInt64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
AgencRespo	String	8 chars	-		Military or federal agency primarily responsible for terminal procedure
Airpolden	String	6 chars	-	2108	Airport/Heliport identifierW
Point1	GeoCoordinate	x,y,z	-		Position (longitude, latitude, altitude) of airport
AirStoNumb	UInt64	-	-		Airport/Heliport storage number
AltMinTyp	AlternateMinimumType	0-2	-		Alternate minimum not standard or not authorized
Country	CountryEntry	0-336	-	2116	Country associated with supplemental terminal procedure data
EmeSafAlti	UInt32	-	Ft		Safe altitude providing obstacle clearance [above MSL]
IcaoCode	String	4 chars	-		Terminal procedure ICAO code
Ident	String	40 chars	-	2102	Terminal procedure identifier
OperaAgenc	String	255 chars	-		Host country agency with authority for the terminal procedure
Remark	String	memo	-		Essential information applying to the entire procedure
RouQuaTyp	RouteQualifierType	0-2	-		Supplements route type - applies to GPS & RNAV type procedures
RouteType	RouteType	0-4	-		Terminal procedure route type
TakMinTyp	TakeoffMinimumType	0-1	-		Takeoff minimum not standard and/or departure procedure are published
TransAltit	UInt32	-	Ft		Altitude below which vertical position controlled by reference to altitudes [above MSL]
TransLeve	UInt32	-	Ft		Lowest flight level above transition altitude [above MSL]

6.41 Terminal Procedure Climb

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	UInt64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
Airpolden	String	6 chars	-	2108	Airport/Heliport identifier
AirStoNumb	UInt64	-	-		Airport/Heliport storage number
ClimbAltit	UInt32	-	Ft		Altitude to which climb rate applies [above MSL]
ClimbFootn	String	90 chars	-		Footnote associated with climb information
CliRatTyp	ClimbRateType	0-4	-		Minimum rate, or ATC climb rate if higher than min. climb rate
Country	CountryEntry	0-336	-	2116	Country associated with terminal procedure climb data
DesceRat	UInt32	-	Ft/m		Minimum or ATC climb rate/descent [vertical velocity ft/min]
IcaoCode	String	4 chars	-		Terminal procedure ICAO code
Ident	String	40 chars	-	2102	Terminal procedure identifier
MinCliRat	UInt32	-	Kts		Minimum climb rate based on 60 knots
OccurNumb	UInt32	-	-		Number of occurrences for a given runway
Point1	GeoCoordinate	x,y,z	-		Position (longitude, latitude, altitude) of airport
RouteType	RouteType	0-4	-		Terminal procedure route type
Runwalden	String	6 chars	-		Runway at which the climb rate information applies

6.42 Terminal Procedure Feeder Route

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	UInt64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
Airpolden	String	6 chars	-	2108	Airport identifier
AirStoNumb	UInt64	-	-		Airport storage number
Altitude	Sint32	-	Ft		Referenced altitude associated with feeder route segment
Country	CountryEntry	0-336	-	2116	Country associated with terminal procedure feeder route
Course	Float32	+/-180	Deg		Course from waypoint 1 to waypoint 2 in route segment
IcaoCode	String	4 chars	-		Feeder route ICAO code
Ident	String	10 chars	-	2102	Feeder route identifier
MagCouIndi	MagneticTrueIndication	0-6	-		Indicates if course is given in degrees magnetic, true or other
RouteDista	Float32	-	Nm		Distance between waypoint 1 and waypoint 2
RouteType	RouteType	0-4	-		Terminal procedure route type
SequeNumbe	UInt32	-	-	2115	Feeder route sequence number
TerProlden	String	40 chars	-	2126	Terminal procedure identifier
WaypoCount	CountryEntry	0-336	-		Waypoint 1 country
Waypolden	String	6 chars	-		Waypoint 1 identifier
Point1	GeoCoordinate	x,y,z	-		Waypoint 1 position (longitude, latitude, altitude)
WaypoCoun1	CountryEntry	0-336	-		Waypoint 2 country
Waypolden1	String	6 chars	-		Waypoint 2 identifier
Point2	GeoCoordinate	x,y,z	-		Waypoint 2 position (longitude, latitude, altitude)

6.43 Terminal Procedure Minima

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	UInt64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
Airpolden	String	6 chars	-	2108	Airport/Heliport identifier
Point1	GeoCoordinate	x,y,z	-		Position (longitude, latitude, altitude) of airport
AirStoNumb	UInt64	-	-		Airport/Heliport storage number
ApproTyp	String	30 chars	-	2107	Type of approach on which minimum data is based
CaADeHeigh	UInt32	-	Ft		Height above highest elevation in the touchdown zone - for a straight in or glideslope approach [above MSL]
CaAHeAbTou	UInt32	-	Ft		Height above highest elevation in the touchdown zone
CaAPrVisib	Float32	-	m		Designated visibility for the approach
CaARuVisib	Float32	-	m		Determined by atmospheric conditions or instrumentally derived value for runway visual range
CaAWeCeili	Float32	-	m		Height equal to or greater than decision height or minimum descent altitude above airport or heliport elevation
CaBDeHeigh	UInt32	-	Ft		Height above highest elevation in the touchdown zone - for a straight in or glideslope approach [above MSL]
CaBHeAbTou	UInt32	-	Ft		Height above highest elevation in the touchdown zone
CaBPrVisib	Float32	-	m		Designated visibility for the approach
CaBRuVisib	Float32	-	m		Determined by atmospheric conditions or instrumentally derived value for runway visual range
CaBWeCeili	Float32	-	m		Height equal to or greater than decision height or minimum descent altitude above airport or heliport elevation
CaCDeHeigh	UInt32	-	Ft		Height above highest elevation in the touchdown zone - for a straight in or glideslope approach [above MSL]
CaCHeAbTou	UInt32	-	Ft		Height above highest elevation in the touchdown zone
CaCPrVisib	Float32	-	m		Designated visibility for the approach
CaCRuVisib	Float32	-	m		Determined by atmospheric conditions or instrumentally derived value for runway visual range
CaCWeCeili	Float32	-	m		Height equal to or greater than decision height or minimum descent altitude above airport or heliport elevation
CaDDeHeigh	UInt32	-	Ft		Height above highest elevation in the touchdown zone - for a straight in or glideslope approach [above MSL]
CaDHeAbTou	UInt32	-	Ft		Height above highest elevation in the touchdown zone
CaDPrVisib	Float32	-	m		Designated visibility for the approach
CaDRuVisib	Float32	-	m		Determined by atmospheric conditions or instrumentally derived value for runway visual range
CaDWeCeili	Float32	-	m		Height equal to or greater than decision height or minimum descent altitude above airport or heliport elevation
CaEDeHeigh	UInt32	-	Ft		Height above highest elevation in the touchdown zone - for a straight in or glideslope approach [above MSL]
CaEHeAbTou	UInt32	-	Ft		Height above highest elevation in the touchdown zone
CaEPrVisib	Float32	-	m		Designated visibility for the approach
CaERuVisib	Float32	-	m		Determined by atmospheric conditions or instrumentally derived value for runway visual range
CaEWeCeili	Float32	-	m		Height equal to or greater than decision height or minimum

					descent altitude above airport or heliport elevation
Country	CountryEntry	0-336	-	2116	Country associated with terminal procedure minima data
IcaoCode	String	4 chars	-		Terminal procedure ICAO code
Ident	String	40 chars	-	2102	Terminal procedure identifier
RouteType	RouteType	0-4	-		Terminal procedure route type
Remark	String	memo	-		Remarks give conditions affecting published approach minimums

6.44 VfrRoute

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	Uint64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
AirlcaCod	String	4 chars	-		ICAO code of the associated airport/heliport
Airpolden	String	6 chars	-	2111	Identifier of the associated airport/heliport
Point1	GeoCoordinate	x,y,z	-		Position (longitude, latitude, altitude) of airport
AirStoNumb	Uint64	-	-		Storage number of the associated airport/heliport
Country	CountryEntry	0-336	-	2116	Country where the airport/heliport is located
Remark	String	memo	-		Essential information pertaining to part or to all route procedures at the airport/heliport
Routelident	String	6 chars	-	2102	Route identifier
RouteName	String	40 chars	-		Route name

6.45 VfrRouteSegment

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	UInt64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
AirlcaCod	String	4 chars	-	2103	ICAO code of the associated airport/heliport
Airpolden	String	6 chars	-	2111	Identifier of the associated airport/heliport
AirStoNumb	UInt64	-	-		Storage number of the associated airport/heliport
Altitude	UInt32		Ft		Reference altitude [above sea level]
Country	CountryEntry	0-336	-	2116	Country where the airport/heliport is located
Course	Float32	+/-180	Deg		Inbound course to the point/checkpoint
CoursRefer	MagneticTrueIndication	0-6	-		Course reference (magnetic/true)
Point2	GeoCoordinate	x,y,z	-		Position (longitude, latitude, altitude) 0.5nm, at 90 degree angle to heading, to left of checkpoint
MgrsPositi	String	20 chars	-		MGRS position given using the UTM or the UPS grid
PathType	PathType	0-6	-		Defines how the route is used (eg: arrival, departure, etc.)
PointName	String	25 chars	-		Official name of point/checkpoint
PointDescr	String	40 chars	-		Landmark, graphical description of point/checkpoint
PoiRepTyp	PointReportingType	0-2	-		Indicates if point is compulsory for graphic presentation of the route
Point1	GeoCoordinate	x,y,z	-		Position (longitude, latitude, altitude) of point/checkpoint
Point3	GeoCoordinate	x,y,z	-		Position (longitude, latitude, altitude) 0.5nm, at 90 degree angle to heading, to right of checkpoint
RoutIdent	String	6 chars	-	2102	Route identifier
RouteName	String	40 chars	-		Route name
SegAltDesc	SegmentAltitudeDescription	0-5	-		Defines how the given altitude applies to the segment
SegmeNam	String	25 chars	-		Official segment name
SegmeNumbe	UInt32	-	-	2115	Defines relative position of segment in total VFR route segment
SegTurDire	PathTurnDirection	0-2	-		Direction in which course turns are to be made
SegmeTyp	SegmentType	0-3	-		Indicates if segment is a starting, next, or ending segment
SOEAAFla	Logical	Boolean	-		Flag indicating whether or not the segment starts or ends at an airport/heliport
VfRoStNumb	UInt64	-	-		Storage number of the associated VFR route record

6.46 Waypoint

Attribute Name	Data Type	Range	Unit	Key	Description
StoraNumbe	UInt64	-	-	2101	Storage number.
AHGT	Logical	1	-		Absolute Height above surface level Flag. Always true.
AirlcaCod	String	4 chars	-		ICAO code of the associated airport.
Airpolden	String	6 chars	-		Ident of the associated airport.
AirStoNumb	UInt64	-	-		Storage number of the associated airport.
Bearing	Float32	+/-180	Deg		Bearing from navaid to waypoint
BeariRefer	MagneticTrueIndication	0-6	-		Bearing reference (magnetic, true, or 'grid')
ColloNavai	Logical	Boolean	-		Waypoint collocated with a navaid flag
Country	CountryEntry	0-336	-	2116	Country where the waypoint is located
Distance	Float32	-	Nm		Distance from navaid to waypoint
DynMagVari	Float32	+/-180	Deg		Dynamic magnetic variation
FixType	FixType	0-16	-		Fix Type
IcaoCode	String	4 chars	-	2103	ICAO code of waypoint
Ident	String	6 chars	-	2102	Waypoint Identifier
Name	String	50 chars	-		Waypoint name/description
NameFormat	NameFormatType	0-16	-		Format of waypoint name field
NavaiCount	CountryEntry	0-336	-		Country where navaid is located
Navaiden	String	6 chars	-		Navaid identifier
NavKeyCod	UInt32	-	-		Distinguish between same type navaid with same ident and country
NavaidType	NavaidType	0-15	-		Navaid type
Point1	GeoCoordinate	x,y,z	-		Waypoint Position (longitude, latitude, altitude)
RnavWaypoi	Logical	Boolean	-		Waypoint is a RNAV waypoint
RouteType	RouteType	0-4	-		Route type
RunlcaCod	String	6 chars	-		Runway ICAO code
Runwalden	String	6 chars	-		Runway identifier
RvsmIndica	RvsmIndicator	0-5	-		Waypoint RVSM indicator
StateName	StateEntry	0-51	-		State or province where waypoint is located
Type	WaypointType	0-15	-		Waypoint type
Usage	WaypointUsageType	0-9	-		Waypoint usage type
WayRecTyp	FixRecordType	0-8	-	2122	Waypoint record type

7. NavAids Attribution Enumeration Values

This section describes the attributes specific to each NAV category whose values are enumerated in accordance to this appendix.

Enumeration Name	Enumerator Description	Values
BoxRegionType		
	Remained Region	0
	Added Region	1
	Removed Region	2
AircraftCategory		
	All aircrafts	0
	Jets only	1
	Turbo props only	2
	Other	3
	Not Defined	4
AircraftGroup		
	All Aircraft	0
	All Aircraft, Cruise speed 250 kts or less	1
	Non-Jet and Turbo Prop	2
	Multi-Engine Props Only	3
	Jets & Turbo Props/Spec., Cruise Spd 190kts or greater	4
	Helicopter Only	5
	Jet Power	6
	Turbo-Prop/Special, Cruise Speed 190 kts or greater	7
	Non-Jet, Non-Turbo Prop	8
	Non-Jet, Cruise Speed 190 kts or greater	9
	Non-Jet, Cruise Speed 189 kts or less	10
	Aircraft as defined in a Continuation Record Note	11
	Single Engine	12
	Twin Engine	13
	Non Turbo Jets	14
	Non Jets	15
	Props	16
	Turbo Props	17
	Turbo Jets	18

	Water Turbo Jets	19
	Water Turbo Props	20
	Not defined	21
AirspaceBoundaryType		
	Advisory Area (ADA or UDA)	0
	Air Defense Identification Zone (ADIZ)	1
	Air Route Traffic Control Center (ARTCC)	2
	Area Control Center (ACC)	3
	Buffer Zone (BZ)	4
	Control Area or Special Rules Area	5
	Ctrl/Special Rules/Military Traffic Zone	6
	Flight Information Region (FIR)	7
	Ocean Control Area (OCA)	8
	Radar Area	9
	Terminal Control Area (TCA or MTCA)	10
	Upper Flight Information Region (UIR)	11
	Mode C Defined Areas	12
	Other	13
	Not Defined	14
AirspaceRestrictionType		
	Alert	0
	Caution	1
	Danger	2
	Military Operations Area	3
	Prohibited	4
	Restricted	5
	Temporary Reserved Airspace	6
	Training	7
	Warning	8
	Not Defined	9
AirspaceType		
	Class C Airspace (was ARSA within the USA)	0
	Control Area - ICAO Designation (CTA)	1
	Terminal Control Area - ICAO Desig (TMA or TCA)	2
	Radar Zone or Radar Area (was TRSA in the USA)	3
	Class B Airspace (was TCA within the USA)	4
	Class D Airspace in USA/Control Zone for ICAO (CTR)	5
	Advisory Area (ADA or UDA)	6
	Air Defense Identification Zone (ADIZ)	7
	Air Route Traffic Control Center (ARTCC)	8
	Area Control Center (ACC)	9
	Buffer Zone (BZ)	10
	Control Area (CTA/UTA)/Special Rules Area (SRA - UK)	11

	Ctrl/Special Rules/Military Traffic Zone	12
	Ocean Control Area (OCA)	13
	Radar Area	14
	Terminal Control Area (TCA or MTCA)	15
	Mode C Defined Areas	16
	Other	17
	Not Defined	18
AirwayLevel		
	All Altitudes	0
	High Level Airway	1
	Low Level Airway	2
	Not Defined	3
AlternateMinimumType		
	Alternate Minimum Not Standard	0
	Alternate Minimum Not Authorized	1
	Not Defined	2
AltitudeDescription		
	At or above Alt1	0
	At or below Alt1	1
	At Alt1	2
	Between two altitudes	3
	At or above Alt2	4
	At Alt1 & Glideslope altitude Alt2	5
	At or above Alt1 & Glideslope Alt Alt2	6
	At Alt1 & Glideslope Intercept Alt2	7
	At or above Alt1 & GS Intercept Alt2	8
	At or above Alt1 & Vertical Angle Alt2	9
	As assigned	10
	Recommended altitude	11
	Glideslope intercept altitude in Alt2	12
	Not Defined	13
AltitudeReference		
	Above Mean Sea Level	0
	Above Ground Level	1
	By Notam	2
	Altitude not limited	3
	Not Defined	4
AltitudeType		
	Feet above sea level	0
	Radar altimeter	1
	Missed approach point	2
	Transition level	3
	Not Defined	4

AltitudeUnit		
	Flight Level	0
	Meters	1
	Feet	2
	Not Defined	3
ApproachPerformance		
	Not defined	0
ApproachRouteType		
	Approach Transition	0
	Localizer/Backcourse Approach	1
	Flight Management System Approach	2
	Instrument Guidance System (IGS) Approach	3
	Instrument Landing System (ILS) Approach	4
	Ground Based Augmentation Sys/GLS Approach	5
	Satellite Based Augmentation Sys Approach	6
	Localizer Only (LOC) Approach	7
	Microwave Landing System (MLS) Approach	8
	Non Directional Beacon (NDB) Approach	9
	Global Positioning System (GPS) Approach	10
	Area Navigation (RNAV) Approach	11
	Tacan Approach	12
	Simplified Directional Facility Approach	13
	VOR Approach	14
	Microwave Landing System Type A Approach	15
	Localizer Directional Aid (LDA) Approach	16
	Microwave Landing System Type B & C Approach	17
	Missed Approach	18
	ILS Back Course Approach	19
	ILS Cat II Approach	20
	VORDME/VORTAC Approach	21
	VOR Circling Approach	22
	NDB Circling Approach	23
	RNAV (GPS) Non-Precision Approach	24
	ILS Cat III Approach	25
	LAAS-GPS/GLS (PAPP record required)	26
	WAAS-GPS (PAPP record required)	27
	RNAV (GPS) Overlay Approach	28
	PAR Approach	29
	NDB/DME Approach	30
	VOR (Based on VORDME or VORTAC) Approach	31
	MLS Cat II Approach	32
	ADF Approach	33

	SDF Approach	34
	MLS Cat III Approach	35
	RNAV (GPS) Precision Approach (Other)	36
	ILS Localizer only Circling Approach	37
	ILS Back Course Circling Approach	38
	Not Defined	39
ArcSegmentDerivation		
	Distance and Bearing	0
	End Coordinates	1
	Derived by Plotted Coordinates	2
	Not Defined	3
ApproachSegmentType		
	Straight-In Approach	0
	Not Defined	1
AssociatedMarkerType		
	Inner Marker Beacon	0
	Middle Marker Beacon	1
	Outer Marker Beacon	2
	Back Marker Beacon	3
	Not Defined	4
AssociatedNavaid		
	Locator	0
	Non-Locator Navaid	1
	Not Defined	2
AtsRouteSegmentType		
	End of Continuous ATS route procedure	0
	Uncharted A-Route intersection	1
	Not Defined	2
BoundaryCode		
	USA	0
	Canada and Alaska	1
	Pacific	2
	Latin America	3
	South America	4
	South Pacific	5
	Europe	6
	Eastern Europe	7
	Middle East-South Asia	8
	Africa	9
	Not Defined	10
BoundaryShape		
	Arc by edge	0
	Circle	1

	Great Circle	2
	Rhumb Line	3
	Counter Clockwise ARC	4
	Clockwise ARC	5
	Point (without radius or bearing)	6
	Generalized	7
	Not Defined	8
CivilMilitaryType		
	CIVIL	0
	MILITARY	1
	CIVIL/MILITARY	2
	CIVIL - MINOR OR NO FACILITIES	3
	MILITARY - MINOR OR NO FACILITIES	4
	PRIVATE	5
	Not Defined	6
ClearanceStatus		
	Airport of Entry	0
	Landing Rights Airport	1
	Airport of Entry/Landing Rights Airport	2
	Not Defined	3
ClimbRateType		
	Minimum Climb Rate	0
	ATC Climb Rate	1
	Not Defined	2
CommsDetails		
	Air/Ground	0
	VHF Direction Finding Service	1
	Remote Communications Air to Ground	2
	Language other than English	3
	Military Use Frequency	4
	Pilot Controlled Light	5
	Remote Communications Outlet	6
	Not Defined	7
CommsEncryption		
	Off	0
	Not Defined	1
CommsFlightType		
	IFR Flight	0
	VFR Flight	1
	Oceanic FIR/UIR	2
	Other FIR/UIR	3
	Not Defined	4
CommsType		

	Area Control Center	0
	Airlift Command Post	1
	Approach Control	2
	Arrival Control	3
	Automatic Terminal Info Service	4
	Automatic Weather Observing Service	5
	Clearance Delivery	6
	Clearance, Pre-Taxi	7
	Control Area (Terminal)	8
	Control	9
	Departure Control	10
	Director (Approach Control Radar)	11
	Enroute Flight Advisory Service	12
	Emergency	13
	Flight Service Station	14
	Ground Comm Outlet	15
	Ground Control	16
	Gate Control	17
	Helicopter Frequency	18
	Information	19
	Multicom	20
	Operations	21
	Radio	22
	Radar	23
	Remote Flight Service Station	24
	Ramp/Taxi Control	25
	Airport Radar Service Area	26
	Terminal Control Area (TCA)	27
	Terminal Control Area (TMA)	28
	Terminal	29
	Terminal Radar Service Area	30
	Transcriber Weather Broadcast	31
	Tower, Air Traffic Control	32
	Upper Area Control	33
	Unicom	34
	Volmet	35
	Ground Control Approach	36
	Parameters (French Radio)	37
	Common Traffic Advisory Frequency	38
	Air/Ground	39
	Approach/Departure Control	40
	Air Route Traffic Control Center	41
	Ground Control/Clearance Delivery	42

	Command Post	43
	Pilot to Dispatcher	44
	Pilot to Metro Service	45
	Airport Advisory Service	46
	Air Route Traffic Control	47
	Preflight	48
	Single Frequency Approach	49
	Miscellaneous	50
	Centralized Approach Control	51
	Aerodrome Flight Info Service	52
	Remote Communications Outlet	53
	Automated Surface Observation System	54
	Flight Communications Center	55
	Flight Operations Center	56
	Airport Weather Information Broadcast	57
	Not Defined	58
ComponentType		
	Locator	0
	Dme	1
	Localizer	2
	Glide Slope	3
	Back Course Marker	4
	Inner Marker	5
	Middle Marker	6
	Outer Marker	7
	MLS Localizer	8
	MLS DME	9
	Not Defined	10

Enumeration Name	Enumerator Description	Value
CountryEntry		
	Unidentified	0
	Afghanistan	1
	Africa - Central	2
	Africa - East	3
	Africa - South	4
	Africa - West	5
	Alaska	6
	Albania	7
	Algeria	8
	American Samoa	9
	American Samoa/Samoa	10
	Andorra	11
	Andorra/Spain	12
	Angola	13
	Anguilla Island	14
	Antarctica	15
	Antigua and Barbuda	16
	Argentina	17
	Argentina/Antarctica	18
	Armenia	19
	Armenia/Azerbaijan/Georgia/Russian Federation	20
	Armenia/Azerbaijan/Kazakhstan/Turkmenistan/Uzbekistan	21
	Aruba	22
	Ashmore and Cartier Island	23
	Asia - Far East	24
	Asia - Middle East	25
	Asia - South	26
	Australia	27
	Australia associated islands	28
	Austria	29
	Austria/Liechtenstein	30
	Azerbaijan	31
	Azerbaijan/Kazakhstan/Russian Federation	32
	Bahamas	33
	Bahrain	34
	Bahrain/Iraq-Saudi Arabia Neutral Zone	35
	Baker Island	36
	Bangladesh	37
	Barbados	38
	Bassas	39

	Belarus	40
	Belarus/Russian Federation	41
	Belgium	42
	Belize	43
	Benin	44
	Bermuda	45
	Bhutan	46
	Bolivia	47
	Bosnia and Herzegovina	48
	Botswana	49
	Bouvet Island	50
	Brazil	51
	British Indian Ocean Territory	52
	British Virgin Islands	53
	Brunei Darussalam	54
	Bulgaria	55
	Burkina Faso	56
	Burma (Myanmar)	57
	Burundi	58
	Cambodia	59
	Cameroon	60
	Canada	61
	Canada - Uplands CFB	62
	Canada - Weather Centres	63
	Cape Verde	64
	Cayman Islands	65
	Central African Republic	66
	Central America/Mexico/West Caribbean	67
	Chad	68
	Chile	69
	Chile/Antarctica	70
	China	71
	Christmas Island	72
	Clipperton Island	73
	Cocos (Keeling) Island	74
	Colombia	75
	Comoros	76
	Congo	77
	Continental China	78
	Cook Islands	79
	Coral Sea Islands	80
	Costa Rica	81
	Croatia	82

	Cuba	83
	Cyprus	84
	Czech Republic	85
	Democratic People's Republic of Korea	86
	Democratic Republic of the Congo	87
	Denmark	88
	Denmark and associated islands	89
	Djibouti	90
	Dominica	91
	Dominican Republic	92
	East Caribbean	93
	East Timor	94
	Ecuador	95
	Egypt	96
	El Salvador	97
	Equatorial Guinea	98
	Eritrea	99
	Estonia	100
	Ethiopia	101
	Europa Island	102
	Europe - North	103
	Europe - South	104
	Europe - West	105
	Ex-URSS region	106
	Falklands Islands	107
	Faroe Islands	108
	Federal Republic of Yugoslavia	109
	Fiji	110
	Fiji and surrounding islands	111
	Finland	112
	France	113
	France and associated islands	114
	French Antilles	115
	French Guyana	116
	French Polynesia	117
	French Polynesia/Pitcairn Island	118
	French Southern and Antarctic Islands	119
	Gabon	120
	Gambia	121
	Gaza Strip	122
	Georgia	123
	Germany	124
	Ghana	125

	Gibraltar	126
	Glorioso Islands	127
	Greece	128
	Greenland	129
	Grenada	130
	Guadeloupe	131
	Guam	132
	Guatemala	133
	Guernsey	134
	Guinea	135
	Guinea-Bissau	136
	Guyana	137
	Haiti	138
	Hawaii	139
	Honduras	140
	Hong Kong	141
	Hong Kong/Paracel Islands	142
	Howland Island	143
	Hungary	144
	Iceland	145
	Iles Wallis et Futuna	146
	India	147
	Indonesia	148
	Indonesia/East Timor	149
	Iran	150
	Iraq	151
	Iraq/Iraq-Saudi Arabia Neutral Zone	152
	Iraq-Saudi Arabia Neutral Zone	153
	Ireland	154
	Isle of Man	155
	Israel	156
	Israel/Gaza Strip	157
	Italy	158
	Italy and enclaved territories	159
	Ivory Coast	160
	Jamaica	161
	Jamaica and surrounding islands	162
	Jan Mayen	163
	Japan	164
	Jarvis Island	165
	Jersey	166
	Johnston Atoll	167
	Jordan	168

Jordan/The West Bank	169
Juan de Nova Island	170
Kazakhstan	171
Kazakhstan/Kyrgyzstan/Uzbekistan	172
Kazakhstan/Tajikistan/Turkmenistan/Uzbekistan	173
Kenya	174
Kingman Reef	175
Kiribati	176
Kiribati and Line Island	177
Kiribati/Jarvis Island	178
Kiribati/Tuvalu	179
Kuwait	180
Kyrgyzstan	181
Laos People's Democratic Republic	182
Latvia	183
Lebanon	184
Lesotho	185
Liberia	186
Libyan Arab Jamahiriya	187
Liechtenstein	188
Lithuania	189
Luxembourg	190
Macao	191
Madagascar	192
Madagascar and surrounding islands	193
Malawi	194
Malaysia	195
Malaysia/Brunei Darussalam	196
Maldives	197
Mali	198
Malte	199
Mariana Islands	200
Mariana Islands (including Guam)	201
Marshall Islands	202
Martinique	203
Mauritania	204
Mauritius	205
Mayotte	206
Mexico	207
Mexico and surrounding islands	208
Micronesia	209
Micronesia/Palau	210
Midway Islands	211

	Monaco	212
	Mongolia	213
	Montserrat	214
	Morocco	215
	Morocco/Western Sahara	216
	Mozambique	217
	Mozambique and surrounding islands	218
	Namibia	219
	Nauru	220
	Navassa Island	221
	Nepal	222
	Netherlands	223
	Netherlands Antilles	224
	Netherlands Antilles/Aruba	225
	New Caledonia	226
	New Zealand	227
	New Zealand/Antarctica	228
	Nicaragua	229
	Niger	230
	Nigeria	231
	Niue Island	232
	Norfolk Island	233
	Norway	234
	Norway and associated territories	235
	Oceania - East	236
	Oceania - North-East	237
	Oceania - West	238
	Oman	239
	Pacific	240
	Pakistan	241
	Palau	242
	Panama	243
	Papua New Guinea	244
	Paracel Islands	245
	Paraguay	246
	Peru	247
	Philippines	248
	Philippines/Spratly Islands	249
	Pitcairn Island	250
	Poland	251
	Portugal	252
	Puerto Rico	253
	Puerto Rico and surrounding Caribbean islands	254

	Qatar	255
	Republic of Korea	256
	Republic of Moldova	257
	Reunion	258
	Romania	259
	Russian Federation	260
	Rwanda	261
	Saint Lucia	262
	Saint Vincent and the Grenadines	263
	San Marino	264
	Sao Tome and Principe	265
	Saudi Arabia	266
	Senegal	267
	Seychelles	268
	Sierra Leone	269
	Singapore	270
	Slovakia	271
	Slovenia	272
	Solomon Islands	273
	Somalia	274
	South Africa	275
	South Africa and surrounding islands	276
	South America	277
	Spain	278
	Spain - Canary Islands	279
	Spratly Islands	280
	Sri Lanka	281
	St. Kitts and Nevis	282
	St.Helena and Ascension Island	283
	St.Pierre and Miquelon	284
	Sudan	285
	Suriname	286
	Svalbard	287
	Swaziland	288
	Sweden	289
	Switzerland	290
	Syrian Arab Republic	291
	Taiwan	292
	Tajikistan	293
	Thailand	294
	The former Yugoslav Republic of Macedonia	295
	The West Bank	296
	Togo	297

	Tokelau	298
	Tonga	299
	Trinidad and Tobago	300
	Tromelin Island	301
	Tunisia	302
	Turk and Caicos Islands	303
	Turkey	304
	Turkmenistan	305
	Tuvalu	306
	Uganda	307
	Ukraine	308
	Ukraine/Russian Federation	309
	United Arab Emirates	310
	United Kingdom	311
	United Kingdom and associated islands	312
	United Republic of Tanzania	313
	United States	314
	United States (Central North-East)	315
	United States (Central North-West)	316
	United States (Central South)	317
	United States (North-East)	318
	United States (North-West)	319
	United States (South-East)	320
	United States (South-West)	321
	Uruguay	322
	US territories - North Pacific Ocean	323
	Uzbekistan	324
	Vanuatu	325
	Vatican City	326
	Venezuela	327
	Viet Nam	328
	Virgin Islands	329
	Virgin Islands/British Virgin Islands	330
	Wake Island	331
	Western Sahara	332
	Western Samoa	333
	Yemen	334
	Zambia	335
	Zimbabwe	336

Enumeration Name	Enumerator Description	Value
CruiseTable		
	ICAO Standard Cruise Table	0
	Exception to ICAO Standard Cruise Table	1
	Modified Cruise Table	2
	Exception to Modified Cruise Table	3
	Not Defined	4
DataSource		
	ARINC 424	0
	DAFIF	1
DataTransferStatus		
	Error Data Lost	0
	Data Transfer Completed	1
	Data Transfer In Progress	2
DayOfWeek		
	Monday	0
	Tuesday	1
	Wednesday	2
	Thursday	3
	Friday	4
	Saturday	5
	Sunday	6
	Not Defined	7
Direction		
	East	0
	West	1
	Not defined	2
DirectionRestriction		
	Forward Direction Route Coded	0
	Backward Direction Route Coded	1
	No Direction Restriction	2
	Not Defined	3
DistanceDescription		
	Out to Specified Distance	0
	Beyond Specified Distance	1
	Not Defined	2
EmissionType		
	A0 - Unmodulated Carrier	0
	A1 - Carrier Keyed	1
	A2 - Tone Keyed Modulation	2
	Not Defined	3
EnrouteAirwayRouteType		

	Airline Airway (Tailored Data)	0
	Control	1
	Direct Route	2
	Helicopter Airway	3
	Officially Designated Airway	4
	RNAV Airway	5
	Undesignated ATS Route	6
	Not Defined	7
ExclusionIndicator		
	All Altitudes in Both Directions Restricted	0
	All Altitudes in Backward Direction Restricted	1
	All Altitudes in Forward Direction Restricted	2
	Not an all altitudes restriction	3
	Not Defined	4
FacilityRecordType		
	Airport	0
	VHF Navaid	1
	NDB Navaid	2
	Terminal NDB	3
	Not Defined	4
FirUirType		
	FIR	0
	UIR	1
	Combined FIR/UIR	2
	Not Defined	3
FixDetails		
	Initial Approach Fix	0
	Intermediate Approach Fix	1
	Initial Approach Fix with Holding	2
	Initial Approach Fix with Final Approach Crse Fix	3
	Final End Point Fix	4
	Published/Database Final Approach Fix	5
	Holding Fix	6
	Final Approach Course Fix	7
	Published Missed Approach Point Fix	8
	Not Defined	9
FixFunction		
	Unnamed Stepdown Fix After Final Approach Fix	0
	Unnamed Stepdown Fix Before Final Approach Fix	1
	ATC Compulsory Waypoint	2
	Oceanic Gateway Waypoint	3
	First Leg of Missed Approach Procedure	4
	Path Point Fix	5

	Named Stepdown Fix	6
	Not Defined	7
FixRecordType		
	Airport	0
	VHF Navaid	1
	NDB Navaid	2
	Terminal NDB	3
	Enroute Waypoint	4
	Airport Waypoint	5
	Heliport Waypoint	6
	Runway	7
	SID	8
	STAR	9
	Navaid (VHF or NDB)	10
	Waypoint (Terminal or Enroute)	11
	ATS Route	12
	Not Defined	13
FixPointType		
	VOR (navaid)	0
	VORTAC (navaid)	1
	TACAN (navaid)	2
	VORDME (navaid)	3
	NDB (navaid)	4
	NDBDME (navaid)	5
	DME (navaid)	6
	Atlantic (ATS Route)	7
	Bahama (ATS Route)	8
	Corridor (ATS Route)	9
	Advisory (ADR) (ATS Route)	10
	Direct, Control Area Routes (ATS Route)	11
	Military (ATS Route)	12
	North American (NAR) (ATS Route)	13
	Oceanic (ATS Route)	14
	RNAV (ATS Route)	15
	Substitute, Canadian Control Area Tracks (ATS Route)	16
	TACAN (ATS Route)	17
	Airway (ATS Route)	18
	Not Defined	19
FixRecordType		
	Airport	0
	VHF Navaid	1
	NDB Navaid	2
	Terminal NDB	3

	Enroute Waypoint	4
	Airport Waypoint	5
	Heliport Waypoint	6
	Runway	7
	Not Defined	8
FixType		
	Final Approach Fix	0
	Initial and Final Approach Fix	1
	Final Approach Course Fix	2
	Intermediate Approach Fix	3
	Off-Route Intersection	4
	Initial Approach Fix	5
	Final Approach Course Fix at Initial Approach Fix	6
	Final Approach Course Fix at Interm. Approach Fix	7
	Missed Approach Fix	8
	Initial Approach Fix and Missed Approach Fix	9
	Oceanic Entry/Exit Waypoint	10
	Unnamed Stepdown Fix	11
	Named Stepdown Fix	12
	FIR/UIR or Controlled Airspace Intersection	13
	Lat/Long Intersection, Full Degree of Latitude	14
	Lat/Long Intersection, Half Degree of Latitude	15
	Not Defined	16
FlyOverType		
	Flyover -End SID/STAR Rte, APCH Transition/Final Approach	0
	End of Terminal Procedure Route Type	1
	Uncharted Airway Intersection	2
	Fly-Over Waypoint (overfly)	3
	Not Defined	4
FrequencyClass		
	UHF/VHF	0
	LF/MF	1
	Not defined	2
FrequencyDirectionRestriction		
	East direction only	0
	West direction only	1
	Both East and West	2
	Not defined	3
FrequencyType		
	Aerodrome Traffic Frequency	0
	Common Traffic Advisory Frequency	1
	Mandatory Frequency	2

	Secondary Frequency	3
	Air/Ground	4
	Discrete Frequency	5
	Air/Air	6
	Not Defined	7
GlsStationType		
	LAAS/GLS	0
	SCAT-1	1
	Not defined	2
GpsFmsIndicator		
	No GPS or FMS Overlay Authorized	0
	GPS Overlay, Nav aids Operating & Monitored	1
	GPS Overlay, Nav aids Installed/Not Monitored	2
	GPS Overlay, Title includes GPS	3
	FMS Overlay Authorized	4
	FMS and GPS Overlay Authorized	5
	Not Defined	6
GuardTransmit		
	Receive Voice Communications	0
	Transmit Voice Communications	1
	Receive and Transmit Voice Comms	2
	Not Defined	3
HoldingPatternType		
	High Altitude	0
	Low Altitude	1
	SID	2
	STAR	3
	Approach	4
	Missed Approach	5
	All Altitude	6
	Not Defined	7
IlsBackCourse		
	Usable	0
	Unusable	1
	Restricted	2
	Not Defined	3
LandingAidCategory		
	ILS Localizer Without Glideslope	0
	CAT I	1
	CAT II	2
	CAT III	3
	IGS	4
	LDA With Glideslope	5

	LDA Without Glideslope	6
	SDF With Glideslope	7
	SDF Without Glideslope	8
	Not Defined	9

Enumeration Name	Enumerator Description	Values
LightingSystem		
	Unidentified	0
	PCL - Pilot Controlled Lighting	1
	SF - Sequenced Flashing Lights	2
	TDZL - Touchdown Zone Lighting	3
	CL - Centerline Lighting System	4
	HIRL - High Intensity Runway Lights	5
	MIRL - Medium Intensity Runway Lighting System	6
	LIRL - Low Intensity Runway Lighting System	7
	RAIL - Runway Alignment Lights	8
	REIL - Runway End Identifier Lights	9
	A - ALSF-2	10
	A1 - ALSF-1	11
	A2 - SALS or SALSF	12
	A3 - SSALR	13
	A4 - MALS and MALSF or SSALS and SSALF	14
	A5 - MALSR	15
	AF - Overrun Centerline	16
	AI - Centerline and Bar	17
	B - US Configuration (b)	18
	BE - Hong Kong Curve	19
	BF - Center row	20
	BG - Left Center Row	21
	BN - Former NATO Standard ©	22
	BO - Center Row	23
	BP - NATO standard	24
	BQ - Center and Double Row	25
	BR - Portable Approach	26
	BS - Center Row	27
	G - Helicopter Approach Lighting System (HALS)	28
	J2 - CALVERT II (BRITISH)	29
	E - Two Parallel row	30
	F - Left Row (High Intensity)	31
	I - Air Force Overrun	32
	J - CALVERT I (BRITISH)	33
	M - Single Row Centerline	34
	N - Narrow Multi-cross	35
	O - Centerline High Intensity	36
	Q - Alternate Centerline and Bar	37
	S - Cross	38
	T - Center Row	39

	U - Singapore Centerline	40
	X - Centerline 2 Crossbars	41
	ODALS - Omni-directional Approach Lighting System	42
	V(VASI) - Visual Approach Slope Indicator	43
	V1 (T-VASI) - T-Visual Approach Slope Indicator	44
	V2 (PVASI) - Pulsating Visual Approach Slope Indicator	45
	V3 (JUMBO) - VASI with a TCH to accommodate long bodied or jumbo aircraft	46
	V4 - Tri-color Arrival Approach (TRICOLOR)	47
	V5 (APAP) - Alignment of Elements System	48
	RETIL - Rapid Exit Taxiway Indicator Lighting	49
	PAPI - Precision Approach Path Indicator	50
	OLS - Optical landing System	51
	WAVEOFF	52
	PORTABLE	53
	FLOODS	54
	LIGHTS	55
	LCVASI - Low Cost Visual Approach Slope Indicator	56
	Lighting Provisional3	57
	Lighting Provisional4	58
	Lighting Provisional5	59
	Lighting Provisional6	60
	Lighting Provisional7	61
	Lighting Provisional8	62
	Lighting Provisional9	63
	Lighting Provisional10	64

Enumeration Name	Enumerator Description	Values
LocationReference		
	Prior to threshold/approach end (near end)	0
	On the runway	1
	On the overrun (far end)	2
	Not defined	3
MagneticTrueIndication		
	Magnetic	0
	True	1
	Mixed Magnetic and True	2
	Other than Magnetic or True	3
	Not Defined	4
MarkerPower		
	Low	0
	High	1
	Not Defined	2
MarkerShape		
	Elliptical	0
	Bone	1
	Not Defined	2
MarkerType		
	Inner Marker Beacon	0
	Middle Marker Beacon	1
	Outer Marker Beacon	2
	Back Marker Beacon	3
	Bone Marker Beacon	4
	Fan Marker Beacon	5
	Low Power Fan Marker Beacon	6
	Z Marker Beacon	7
	Not Defined	10
MaximumTirePressure		
	High - No Limit	0
	Medium - Limited to 217 psi	1
	Low - Limited to 145 psi	2
	Very Low - Limited to 73 psi	3
	Not Defined	4
MilitaryRouteType		
	Instrument Route	0
	Visual Route	1
	Slow Route	2
	Not Defined	3
MIsCollocation		

	DME Collocated With MLS Azimuth	0
	DME Collocated With MLS Elevation	1
	DME Non Collocated With MLS	2
	Not Defined	3
Modulation		
	Amplitude Modulated Frequency	0
	Frequency Modulated Frequency	1
	Not Defined	2
MonitoredFrequency		
	VHF Emergency Frequency 121.5	0
	UHF Emergency Frequency 243.0	1
	VHF/UHF Emergency Frequencies	2
	VHF 121.5 and VHF/UHF Emergency Freq	3
	UHF 243.0 and VHF/UHF Emergency Freq	4
	VHF 121.5 and UHF 243.0 Emergency Freq	5
	Not Defined	6
NameFormatType		
	Abeam Fix	0
	Bearing and Distance Fix	1
	Airport Name as Fix	2
	FIR Fix	3
	Phonetic Letter Name Fix	4
	Airport Ident as Fix	5
	Latitude/Longitude Fix	6
	Multiple Word Name Fix	7
	Navaid Ident as Fix	8
	Published Five-Letter Name Fix	9
	Published Less Than 5-Letter Fix	10
	Published More Than 5-Letter Fix	11
	Airport/Runway Related Fix	12
	UIR Fix	13
	Official 5-letter Localizer Name	14
	Unofficial 5-letter Localizer	15
	Not Defined	16
NavaidCollocation		
	Collocated Navaid	0
	Non Collocated Navaid	1
	DME Collocated With ILS Localizer	2
	DME Collocated With ILS Glide Slope	3
	DME Non Collocated With ILS	4
	DME Collocated With MLS Azimuth	5
	DME Collocated With MLS Elevation	6
	DME Non Collocated With MLS	7

	Not Defined	8
NavaidRangePower		
	Terminal	0
	Low Altitude	1
	High Altitude	2
	200 Watts or More	3
	50 to 1999 Watts	4
	25 to Less Than 50 Watts	5
	Less Than 25 Watts	6
	Not Defined	7
NavaidStatus		
	In-Service	0
	Out of Service	1
	On Test	2
	Not Defined	3
NavaidType		
	VOR	0
	DME	1
	VOR/DME	2
	TACAN - Channels 17-59 and 70-126	3
	Military TACAN - Channels 1-16 and 60-69	4
	VORTAC	5
	ILS/DME	6
	ILS/TACAN	7
	MLS/Narrow Spectrum DME	8
	MLS/Precision DME	9
	NDB	10
	NDB-DME	11
	SABH	12
	Marine Beacon	13
	VOR Test Station	14
	Not Defined	15
NotamSystem		
	FAA/DOD Full Coverage	0
	FAA/DOD Partial Coverage	1
	US Army Flight Operations Detachment	2
	German Federal Armed Forces	3
	Not Defined	4
ObjectStatus		
	Station is alive / Reset status to alive	0
	Station is killed / Set status to killed	1
	Leave station status as it is	2
ObjectType		

	Airport	0
	AirspaceBoundary	1
	AirwayRestriction	2
	Approach	3
	Comms	4
	ControlledAirspace	5
	EnrouteAirway	6
	FirUir	7
	Gate	8
	Gls	9
	Helipad	10
	Heliport	11
	HoldingPattern	12
	Ils	13
	Marker	14
	Mls	15
	Msa	16
	Navaid	17
	OffRouteTerrainClearanceAlt	18
	PresetSite	19
	RestrictiveAirspace	20
	Runway	21
	Sid	22
	SpecialUseAirspace	23
	Star	24
	SupplementalTerminalData	25
	TerminalProcedureClimb	26
	TerminalProcedureFeederRoute	27
	TerminalProcedureMinima	28
	VfrRoute	29
	Waypoint	30
ObjectUpdateType		
	Object has not been updated	0
	Object has been deleted from database	1
	Object has changed	2
	Object has been added to database	3
	Object status has changed	4
OperatingHours		
	24 Hours	0
	Sunrise to Sunset	1
	No Hours Listed	2
	Refer to Remarks	3
	Unknown Hours	4

PadShape		
	Rectangular	0
	Circular	1
	Not Defined	2
ParachuteJumpAreaType		
	Bearing/Distance to a point	0
	A point	1
	Bearing/Distance to an area	2
	Geographic area (defined by coords)	3
	Area defined by 2 brgs & 2 distances	4
	Multiple areas defined by brg/distance	5
	Unspecified, Call Tower	6
	Not Defined	7
PathDataSelector		
	Not defined	0
PathTermination		
	Initial Fix (IF)	0
	Track to a Fix (TF)	1
	Course to a Fix (CF)	2
	Direct to a Fix (DF)	3
	Fix to an Altitude (FA)	4
	Track from a Fix from a Distance (FC)	5
	Track from a Fix to DME Distance (FD)	6
	From a Fix to Manual Termination (FM)	7
	Course to an Altitude (CA)	8
	Course to a DME Distance (CD)	9
	Course to an Intercept (CI)	10
	Course to a Radial Termination (CR)	11
	Constant Radius Arc (RF)	12
	Arc to a Fix (AF)	13
	Heading to Altitude Termination (VA)	14
	Heading to DME Distance Termin. (VD)	15
	Heading to an Intercept (VI)	16
	Heading to a Manual Termination (VM)	17
	Heading to a Radial Termination (VR)	18
	Procedure Turn (PI)	19
	Crse Reversal Altitude Termination (HA)	20
	Crse Reversal Single Circuit Term. (HF)	21
	Course Reversal Manual Termination (HM)	22
	Not Defined	23
PathTurnDirection		
	Left	0
	Right	1

	Not Defined	2
PathType		
	Arrival Route	0
	Departure Route	1
	Holding Pattern	2
	Part of a Terminal Traffic Pattern	3
	VFR Transition	4
	Other	5
	Not Defined	6
PavementEvaluationMethod		
	Technical	0
	By Experience Using Pavement	1
	Not Defined	2
PavementSubgradeCategory		
	High	0
	Medium	1
	Low	2
	Ultra-Low	3
	Not Defined	4
PavementType		
	Rigid	0
	Flexible	1
	Water	2
	Not Defined	3
PointReportingType		
	Compulsory Reporting Point	0
	Non-Compulsory Reporting Point	1
	Not Defined	2
PointFunction		
	Alternate Entry Point	0
	Alternate Exit Point	1
	Alternate Entry/Exit Point	2
	Entry Point (Starting Point)	3
	Turning Point	4
	Exit Point (Ending Point)	5
	Not Defined	6
PreferredRouteType		
	N-Ameri Rtes for N-Atlantic Traffic - Common	0
	Preferential Routes	1
	Pacific Oceanic Transition Routes (PACOTS)	2
	TACAN Routes (Australia)	3
	N-Ameri Rtes for N-Atlantic Trffic -Noncommon	4
	Preferred/Preferential Overflight Routes	5

	Preferred Routes	6
	Traffic Orientation System Routes (TOS)	7
	Tower Enroute Control Routes (TEC)	8
	Not Defined	9
PresetSiteType		
	Gate	0
	CAL Site	1
	Hold	2
	Takeoff	3
	Opposite End	4
	Not Defined	5
	Ramp	6
	Parking Spot	7
	Taxi	8
PrimaryTimeCode		
	Active Continuously Including Holidays	0
	Active Continuously Excluding Holidays	1
	Active Non-Continuously, see Cont. Rec	2
	Active Times Announced by NOTAM	3
	Not Defined	4
RadioClassCode		
	Non-Directional Beacon, 50-2000 Watts	0
	Interference-Free 40NM up to 18000 feet	1
	Interference-Free 25NM up to 12000 feet	2
	Non-Directional Beacon, 50 Watts or less	3
	Non-Directional Beacon, 2000 Watts & up	4
	Interference-Free Service Varies	5
	Compass Locator, 25 Watts or less, 15NM	6
	Not Defined	7
RangeReliability		
	Terminal Within 25 nm	0
	Low Altitude - Within 40 nm	1
	High Altitude - Within 130 nm	2
	Extended High Altitude - Beyond 130 nm	3
	Out of Service	4
	High Level	5
	Low Level	6
	High and Low Level	7
	RNAV	8
	Terminal	9
	Not Defined	10
RefuelingAltitudeDescription		
	At or above Altitude 1	0

	At or below Altitude 1	1
	Between Altitude 1 and 2	2
	At Altitude 1	3
	Not defined	4
RefuelingDirection		
	North	0
	South	1
	East	2
	West	3
	Northeast	4
	Northwest	5
	Southeast	6
	Southwest	7
	Not defined	8
RefuelingOperationType		
	Anchor	0
	Track	1
	Anchor or Track	2
	Not defined	3
RefuelingPointType		
	Air refueling initial point	0
	Air refueling control point	1
	Navigation check point	2
	Exit point	3
	Entry point (anchors only)	4
	Anchor point (anchors only)	5
	Anchor pattern (anchors only)	6
	Not defined	7
RestrictionType		
	Altitude Exclusion	0
	Cruising Table Replacement	1
	Seasonal Restriction	2
	Note Restriction	3
	Not Defined	4
ReturnCode		
	Ok	0
	Fail	1
	Not Found	2
	Request Pending	3
	Request In Progress	4
	Request Completed	5
	Unappropriate Container Type Ident	6
	Container Ownership Unappropriate	7

	Status unavailable	8
	User cancelled operation	9
	File name not specified	10
	Database Name not found	11
	Client already registered	12
	Client is not registered	13
	Client is unauthorized	14
	Request is not registered	15
	Request is unauthorized	16
	Duplicate Item	17
	No Associated Runway	18
	Kill command doesn't match Navaid component	19
	Unique Id doesn't match NavObject component	20
	NavObject already exists in the database	21
	Local area has not been defined	22
	Service unavailable in current LOF DLL	23
	Gaussian's Coefficient are unavailable	24
	Gaussian's Coefficients model are out of date	25
	Theoretical Result. Computed with a magnetic model (WMM or IGRS)	26
	Accessing wrong magnetic model	27
	Data Type mismatch	28
	Another client is already registered as editor	29
	Edition mode is not active	30
	Edition mode activated	31
	Edition mode deactivated	32
	The supported Interface is not implemented	33
	The requested service is not supported on server	34
	Null	250
	No key is defined	251
	Null Object	252
	Insertion Fail	253
	Removal Fail	254
	File Opened	255
	File Closed	256
	File Not Found	257
	Parsing In Progress	258
	Database Empty	259
	Container Owner Unappropriate	260
	No Object Found	261
	Key wrongly assigned	262
	Restriction Not Satisfied	263
	Copy Failed	264

	Selected Nav Type does not exists	265
	The kill station command has been sent	266
RouteAltitudeDescription		
	At or above Altitude 1	0
	At or below Altitude 1	1
	Between Altitude 1 and 2	2
	At Altitude 1	3
	As Assigned	4
	Not defined	5
RouteQualifier1		
	DME required	0
	RNAV/E if applicable	1
	RNAV/F if applicable	2
	GPS required	3
	GPS required, DME/DME to RNP Not Authorized	4
	DME not required	5
	GPS or DME/DME to RNP required	6
	DME/DME required	7
	VOR/DME RNAV	8
	Not Defined	9
RouteQualifier2		
	Primary Missed Approach	0
	Secondary Missed Approach	1
	Engine Out Missed Approach	2
	Procedure with Circle-to-Land Minimums	3
	Procedure with Straight-In Minimums	4
	Procedure Designed for Helicopter to Runway	5
	Not Defined	6
RouteQualifierType		
	RNAV, GPS required, DME/DME to RNP Not Auth.	0
	RNAV, GPS or DME/DME to RNP authorized	1
	Not Defined	2
RouteStatus		
	Open	0
	Closed	1
	Restricted	2
	Alternate	3
	Seasonal, Conditional	4
	Not defined	5
RouteType		
	SID	0
	STAR	1
	Approach	2

	Multiple	3
	Not Defined	4
RouteUse		
	Point-to-Point	0
	Area-to-Area	1
	Not Defined	2
RoutingType		
	Designated Airway	0
	Direct to Fix	1
	Initial Fix	2
	Route via Fix	3
	Route via Fix not permitted	4
	Standard Instrument Departure	5
	Standard Terminal Arrival & Profile Descent	6
	Not Defined	7
RunwaySurfaceType		
	Asphalt, Asphaltic Concrete, Tar, Macadam	0
	Brick - Laid or Mortared	1
	Concrete	2
	Composite - 50 percent or more of runway is permanent	3
	Part concrete, asphalt, or bitumen-bound macadam	4
	Permanent - Surface type unknown	5
	Bituminous, tar or asphalt mixed in place, oiled	6
	Clay	7
	Composite - less than 50 percent of runway is permanent	8
	Coral	9
	Graded or rolled earth, grass on graded earth	10
	Grass or earth not graded or rolled	11
	Gravel	12
	Ice	13
	Laterite	14
	Macadam - crushed rock water bound	15
	Membrane - plastic or other fiber material	16
	Mix in place using non-bituminous binders (eg: portland)	17
	Pieced steel planking	18
	Sand	19
	Snow	20
	Not Defined	21
RvsmIndicator		
	Entry/Exit	0
	Entry Only	1
	Exit Only	2
	RVSM Transition Waypoint	3

	RVSM on Airway or Stand Alone	4
	Not Defined	5
SegmentAltitudeDescription		
	At or above altitude specified	0
	At or below altitude specified	1
	As assigned	2
	At altitude specified	3
	Recommended altitude	4
	Not Defined	5
SegmentNavaidType		
	VOR	0
	VOR-TAC	1
	TACAN	2
	VOR-DME	3
	NDB	4
	NDB-DME	5
	DME	6
	ILS Locator	7
	ILS DME	8
	ILS Localizer	9
	Waypoint	10
	MLS	11
	MLS-DME	12
	Not Defined	13
SegmentType		
	Starting Segment	0
	Next Segment	1
	Ending Segment	2
	Not Defined	3
ServerState		
	Off	0
	Initializing	1
	Online	2
	Partially Operational	3
	Not Operational	4
	Not Responding	5
	Not Available	6
	Parsing in Progress	7
ServiceIndicator		
	Airport Advisory Service	0
	Community Aerodrome Radio Station	1
	Departure Service (not Control Unit)	2
	Flight Information Service	3

	Initial Contact	4
	Arrival Service (not Control Unit)	5
	Pre-Departure Clearance (Data Link)	6
	Aerodrome Flight Information Service	7
	Terminal Area Control (not Control Unit)	8
	Aeronautical Enroute Information Service	9
	Not Defined	10
ServiceProvider		
	Not Defined	0
SidRouteType		
	Engine Out SID	0
	SID Runway Transition	1
	SID or SID Common Route	2
	SID Enroute Transition	3
	RNAV SID Runway Transition	4
	RNAV SID or RNAV SID Common Route	5
	RNAV SID Enroute Transition	6
	FMS SID Runway Transition	7
	FMS SID or SID Common Route	8
	FMS SID Enroute Transition	9
	Vector SID Runway Transition	10
	Vector SID Enroute Transition	11
	Not Defined	12
SignalEmission		
	Double Sideband (A3)	0
	Single Sideband, Reduced Carrier (A3A)	1
	Two Independent Sidebands (A3B)	2
	Single Sideband, Full Carrier (A3H)	3
	Single Sideband, Suppressed Carrier (A3J)	4
	Lower (single) Sideband, Carrier Unknown	5
	Upper (single) Sideband, Carrier Unknown	6
	Not Defined	7
SignalModulation		
	400 Hz	0
	1020 Hz	1
	Not Defined	2
SpeedUnit		
	TAS in Knots	0
	TAS in Mach	1
	TAS in Kilometers/Hour	2
	Not Defined	3
StarRouteType		
	STAR Enroute Transition	0

	STAR or STAR Common Route	1
	STAR Runway Transition	2
	RNAV STAR Enroute Transition	3
	RNAV STAR or RNAV STAR Common Route	4
	RNAV STAR Runway Transition	5
	Profile Descent Enroute Transition	6
	Profile Descent or Prof. Desc. Common Route	7
	Profile Descent Runway Transition	8
	FMS STAR Enroute Transition	9
	FMS STAR or STAR Common Route	10
	FMS STAR Runway Transition	11
	Not Defined	12

Enumeration Name	Enumerator Description	Value
StateEntry		
	Unidentified	0
	Alabama	1
	Alaska	2
	Arizona	3
	Arkansas	4
	California	5
	Colorado	6
	Connecticut	7
	Delaware	8
	District of Columbia	9
	Florida	10
	Georgia	11
	Hawaii	12
	Idaho	13
	Illinois	14
	Indiana	15
	Iowa	16
	Kansas	17
	Kentucky	18
	Louisiana	19
	Maine	20
	Maryland	21
	Massachusetts	22
	Michigan	23
	Minnesota	24
	Mississippi	25
	Missouri	26
	Montana	27
	Nebraska	28
	Nevada	29
	New Hampshire	30
	New Jersey	31
	New Mexico	32
	New York	33
	North Carolina	34
	North Dakota	35
	Ohio	36
	Oklahoma	37
	Oregon	38
	Pennsylvania	39

	Rhode Island	40
	South Carolina	41
	South Dakota	42
	Tennessee	43
	Texas	44
	Utah	45
	Vermont	46
	Virginia	47
	Washington	48
	West Virginia	49
	Wisconsin	50
	Wyoming	51

Enumeration Name	Enumerator Description	Values
SynchronisationType		
	Synchronous	0
	Asynchronous	1
	Not Defined	2
TakeoffMinimumType		
	Takeoff Not Standard	0
	Not Defined	1
TimeCode		
	Active Continuously Including Holidays	0
	Active Continuously Excluding Holidays	1
	Active for Time of Operation Excluding Holidays	2
	Active for Time of Operation Including Holidays	3
	Not Defined	4
TimeIndicator		
	Time Codes are Local Time	0
	Time Codes adjusted for Daylight Savings Time	1
	Times shown in Universal Coordinated Time	2
	Not Defined	3
TrackDescription		
	Automatically at the fix after one full circuit	0
	Automatically at a fix after reaching an altitude	1
	Manually	2
	Not Defined	3
TurnDirection		
	Left	0
	Right	1
	Left or Right	2
	Not Defined	3
WaypointDescription		
	Airport as Waypoint	0
	Essential Waypoint	1
	Off Airway Waypoint	2
	Runway/Helipad as Waypoint	3
	Heliport as Waypoint	4
	NDB Navaid as Waypoint	5
	Phantom Waypoint	6
	Non-Essential Waypoint	7
	Transition Essential Waypoint	8
	VHF Navaid as Waypoint	9
	Airport or Heliport as Waypoint	10
VOR, VORDME, VORTAC as Waypoint	11	

	Tacan as Waypoint	12
	NDB, NDBDME as Waypoint	13
	ILS as Waypoint	14
	Not Defined	15
WaypointType		
	Arc Center Fix Waypoint	0
	Combined Named Intersection and RNAV Waypoint	1
	Unnamed Charted Intersection	2
	Middle Marker as Waypoint	3
	NDB Navaid as Waypoint	4
	Terminal NDB Navaid as Waypoint	5
	Outer Marker as Waypoint	6
	Named Intersection	7
	Uncharted Airway Intersection	8
	VFR Waypoint	9
	RNAV Waypoint	10
	Unnamed Charted Off Route Fix	11
	Named NDB	12
	Off Route NDB	13
	Named Off Route Fix	14
	Not Defined	15
WaypointUsageType		
	High and Low Altitude	0
	High Altitude	1
	Low Altitude	2
	Terminal Use Only	3
	RNAV	4
	Runway or Displaced Threshold	5
	Pitch and Catch (RNAV)	6
	Off Route Intersection in FAA Airspace	7
	ATCAA and SUAS Waypoints in FAA High Alt	8
	Not Defined	9
WeatherBroadcast		
	Automatic Transcribed Weather Broadcast	0
	Scheduled Weather Broadcast	1
	Not Defined	2
WeatherCondition		
	Visual Flight Rules	0
	Instrument Flight Rules	1
	Visual Meteorological Rules	2
	Instrument Meteorological Rules	3
	Notice to Airmen	4
	Visual and Instrument Flight Rules	5

	Visual and Instrument Meteorological Rules	6
	Not Defined	7
GroupPermission		
	User	0
	Editor	1
	Admin	2
LoggerMessage		
	Number of duplicate %s	6
	IDENT %s has %s duplicates	7
OutputTypeEnum		
	Container output	0
	Dual container output	1
	Status output	2
	Container and status output	3
	Parser status output	4
	String array output	5
	Value output	6

8. Annex A: Revision history

Date	Release	Author	Paragraph modified	Description
4/4/2016	1.0	C. Reed		Version for OAB review
6/23/2016	R2	C. Reed		Version for approval vote
11/20/2016		C. Reed		Final version for publication