

X-PLANE

AIRWAY DATA (EARTH_AWY.DAT) FILE SPECIFICATION

VERSION 1101

REVISION HISTORY

- | | |
|-------------|-------------------------------|
| 10 Aug 2016 | Spec updated for X-Plane 11 |
| 11 Apr 2017 | Minor clarifications, wording |

APPLICABILITY

This specification (XP AWY1101) is supported in X-Plane 11.00 and later. It is identified in the data files as “1100 Version” on the second row of the file. The prior specification for airway data was XP AWY640, which was compatible with X-Plane 6.40 – 10.99. Changes in the spec for XP AWY1100 were:

- Enforcing referential integrity of airways, fixes and navaids. Instead of defining airways through separate geographic locations, airways now reference enroute fixes and navaids.
- New column for directional restrictions. Airways can be defined as one-way routes now.

OVERVIEW & SCOPE

This specification defines all airways by listing all their segments. The effect of this data is to:

- Allow these airways to be selected in X-Plane’s GPS and FMC systems.
- Allow these airways to be used for IFR flight planning with X-Plane’s ATC
- Draw high- and low level airways on X-Plane’s charts

BASIC CONCEPTS

- An airway segment can only be defined between two points that are either listed in the enroute portions of earth_nav.dat or earth_fix.dat
- If an airway segment is both High and Low, then it must be listed twice (once in each category).

- If a segment is shared by multiple airways, and the minimum and maximum authorized altitudes or directional restrictions are different for each airway on this common segment, the indicated minimum and maximum altitudes or directional restrictions on this segment are undefined and could be applicable for one, but not necessarily all airways that use the shared segment.

FILE CHARACTERISTICS

The earth_awy.dat files are plain text files:

- Fields in the data can be separated by one or more white space (space, tab) characters.
- By default, the files are generated so that columns of data are consistently aligned, but this is not required.

FILE STRUCTURE

In common with most other X-Plane data file specification, header rows of data define the origin (“I” = Intel byte order or “A” = Motorola byte order) of a particular copy of a file, and define the file specification version. The file specification must include the four-digit AIRAC cycle date (e.g. 1602 for the AIRAC cycle effective 4-Feb-16, refer to https://www.nm.eurocontrol.int/RAD/common/airac_dates.html for cycle dates), an 8-digit build date and the reference to this document. A copyright message may be added, while the total length of this line is not to exceed 1024 characters:

```
I
1100 Version - data cycle 1602, build 20160204, metadata AwyXP1100. Copyright © 2016, Robin A. Peel (robin@xsquawkbox.net)...
```

The complete copyright message should be left intact if you redistribute this data. The GNU GPL (general public License) under which this data is released is designed to encourage modifications, enhancements and redistribution, even in commercial derivative products. More details about this license are available on my website (<http://data.x-plane.com>).

Subsequent rows of data define each airway segment. Sequence is not important.

The file is terminated by a ‘99’:

```
99
```

ROW CODES

Unlike other data files, no ‘row codes’ are used for airway data, since the file contains just one type of data.

EXAMPLE DATA

Here is a simplified data fragment for three airway segments in awy.dat:

```
ABCDE K1 11 ABC K1 3 N 2 180 450 J13
ABC K1 3 DEF K2 3 N 2 180 450 J13
DEF K2 3 KLMNO K2 11 F 2 180 450 J13-J14-J15
```

DEFINITION OF DATA FIELDS

Each column in each row is defined below, using the example data from shown above. Note that:

Row	Meaning <i>Example value</i>	Comment <i>Explanation</i>	<i>Valid values</i>
[none]	Airway Segment	Upper or lower airway segment	No row codes are used, since all data refers to segments
	ABCDE	Identifier of enroute fix or navaid at the beginning of this segment	One to five character valid identifier of known fix or navaid
	K1	ICAO region code of enroute fix or navaid at the beginning of this segment	Must be region code according to ICAO document No. 7910
	11	Type of Fix or Navaid	11 = Fix, 2 = enroute NDB, 3 = VHF navaid (VOR, TACAN, DME)
	ABC	Identifier of enroute fix or navaid at the end of this segment	One to five character valid identifier of known fix or navaid
	K1	ICAO region code of enroute fix or navaid at the end of this segment	Must be region code according to ICAO document No. 7910
	3	Type of Fix or Navaid	11 = Fix, 2 = enroute NDB, 3 = VHF navaid (VOR, TACAN, DME)
	N	Directional Restriction. This segment has N = "No" directional restriction. If the directional restriction is F = "Forward", the airway segment is authorized to be flown in the direction from the first fix to the second fix. If the directional restriction is B = "Backward", the segment is only to be flown in the direction from second fix to first fix.	N = "None", F = "Forward", B = "Backward"
	2	This is a "High" airway (1 = "low", 2 = "high"). If an airway segment is both High and Low, then it should be listed twice (once in each category). This determines if the airway is shown on X-Plane's "High Enroute" or "Low Enroute" charts.	1 = "Low", 2 = "High"
	180	Base of airway in hundreds of feet (18000 ft in this example)	Integer between 0 and 600
	450	Top of airways in hundreds of feet (45000 ft in this example)	Integer between 0 and 600
	J13	Airway segment name. If multiple airways share this segment, then all names will be included separated by a hyphen (eg. "J13-J14-J15")	Up to five characters per name, names separated by hyphens

FURTHER INFORMATION

Resources are available for airport and nav-aid designers at the X-Plane Scenery Gateway at <http://gateway.x-plane.com/>