X-PLANE

NAVIGATION DATA FOR FIXES (USER_FIX.DAT & EARTH_FIX.DAT) FILE SPECIFICATION

VERSION 1100

REVISION HISTORY

12 July 2009   Spec converted to this new format to support new web site (http://data.x-plane.com).

10 Aug 2016   Spec updated for X-Plane 11

APPLICABILITY

This specification (XP FIX1100) 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 fix data was XP FIX600, which was compatible with X-Plane 6.00 – 10.99.   Changes in the spec for XP NAV1100 were:

- New column for terminal area identifier
- New column for region identifier

OVERVIEW & SCOPE

This specification defines all fixes (also known as waypoints or intersections) in X-Plane. This includes both enroute waypoints (EA-records in ARINC424 data) and terminal waypoints (PC-records in AINC424 data). The effect of this data is to:

- Allow these fixes to be selected in X-Plane's GPS and FMC systems.
- Display the fixes on X-Plane's charts.

BASIC CONCEPTS

- Latitudes and longitudes are described in a decimal notation (e.g. 20.12345678).
    - A latitude of 50 degrees 30 minutes south would be defined as -50.50000000
- North latitudes and east longitudes are positive. South latitudes and west longitudes are negative.
- Terminal waypoints must specify the airport whose terminal area they belong to
- Enroute waypoints must specify the ICAO region code according to ICAO document No. 7910

FILE CHARACTERISTICS

The earth_fix.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 FixXP1100. Copyright © 2016, Robin A. Peel (robin@xsquawkbox.net)...
```

Subsequent rows of data define each waypoint. Sequence is not important, but by default this file is sorted alphabetically by fix name.

The file is terminated by a '99':

```
99
```

ROW CODES

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

EXAMPLE DATA

Here is example data for a fixes:

```
46.646819444 -123.722388889  AAYRR KSEA K1
37.770908333 -122.082811111  AAAME ENRT K2
```

DEFINITION OF DATA FIELDS

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

Row	Meaning	Comment	Valid values
	Example value	*Explanation*	*Valid values*
[none]	Fix	Fix or IFR intersection	No row codes are used, since all data refers to fixes
	46.64641944	Latitude of fix in decimal degrees	Eight decimal places supported
	-123.72238889	Longitude of fix in decimal degrees	Eight decimal places supported
	AAYRR	ID of fix	Usually five characters. Unique within an ICAO region.
	KSEA	ID of airport terminal area or "ENRT" for enroute fixes	Must be either airport identifier or "ENRT"
	K1	ICAO region code of enroute fix or terminal area airport	Must be region code according to ICAO document No. 7910 For terminal waypoints, the region code of the airport is used

FURTHER INFORMATION

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