

APRGP GPS RINEX OBSERVATION FILE STANDARDISATION SPECIFICATION

This specification is drafted for the purpose of ensuring input parameters are correctly entered during creation of GPS RINEX observation files which will facilitate easy post processing of the campaign data set.

Observation file name

Since some statistic information in data pre-processing is obtained from the RINEX *file name*, the file name must be given correctly.

According to the specification for the RINEX format, the observation *file name* (o-file) is defined as following:
xxxxddd.s.yyo (use lower case characters for RINEX *file name*)

where:

xxxx is the four character *site name* (also known as the four character station identifier or SINEX site code),

ddd is the *day of year* (DOY),

s is the *session number*, use s=0 (zero) for files containing all existing data at a site for a single day.

yy is the last two digits of year.

e.g. alic2800.99o for the *site name* ALIC, which is station mark number AU012 at Alice Springs in Australia, on day 280 of 1999 (7th October 1999).

Header of RINEX file

Input items in RINEX header records such as site name, receiver information, antenna information and the start time must be given correctly. The first 28 lines of the RINEX observation file alic2800.99o are listed below as a sample RINEX file with correctly entered header record information.

```
.....1|0...2|0...3|0...4|0...5|0...6|0...7|0...8|
2 OBSERVATION DATA G (GPS) RINEX VERSION / TYPE
RGRINEXO V2.5.2 UX AUSLIG 08-OCT- 0 12:31 PGM / RUN BY / DATE
AUSTRALIAN REGIONAL GPS NETWORK (ARGN) COMMENT
ALICE SPRINGS AU012 COMMENT
-0.000000000083 HARDWARE CALIBRATION (S) COMMENT
0.000000067007 CLOCK OFFSET (S) COMMENT
BIT 2 OF LLI (+4) FLAGS DATA COLLECTED UNDER "AS" CONDITION COMMENT
ALIC MARKER NAME
50137M001 MARKER NUMBER
TWILLEY AUSLIG OBSERVER / AGENCY
128 AOA ICS-4000Z 95.02.28 / 3.2.32.9 REC # / TYPE / VERS
318 AOAD/M_T ANT # / TYPE
-4052053.6361 4212836.6703 -2545107.5865 APPROX POSITION XYZ
0.0070 0.0000 0.0000 ANTENNA: DELTA H/E/N
1 1 WAVELENGTH FACT L1/2
5 C1 L1 L2 P2 P1 # / TYPES OF OBSERV
30 INTERVAL
1999 10 7 0 12 0.000000 0 8 07 09 24 04 02 26 08 05 TIME OF FIRST OBS
END OF HEADER
```

```
99 10 7 0 12 0.000000 0 8 07 09 24 04 02 26 08 05
22459947.501 -12013522.313 6 -9361195.9174 22459955.2074
21511090.555 -16359373.631 7 -12747558.8944 21511095.9954
22576643.755 -12370675.942 6 -9639476.5524 22576653.4354
21766156.019 -3252101.789 7 -2534102.0264 21766162.1334
24428383.444 12687528.341 5
21618682.315 2787796.458 7 2172305.3744 21618688.8194
24185371.285 -2820747.201 6
23163630.792 -7046172.453 6 -5490518.0824 23163642.2104
```

```
.....1|0...2|0...3|0...4|0...5|0...6|0...7|0...8|
```

Columns 61 to 80 of the RINEX header records contain the header record labels. The header records section of the RINEX file is terminated with the "END OF HEADER" labelled record.

It is critical that the following information entered in the RINEX header records is correct to minimise the problems encountered by the processing/analysis centres.

- “MARKER NAME” labelled header record.
Four character *site name*, same as used for *file name*. (e.g. ALIC in above sample)
- “MARKER NUMBER” labelled header record.
Station name/number used to uniquely identify the station mark. (e.g. 50137M001 in above sample)
- “REC # / TYPE / VERS” labelled header record.
Receiver serial number. (e.g. 128 in above sample)
The receiver type should comply with the receiver naming conventions in Reference Document 2 below. (e.g. AOA ICS-4000Z in above sample)
- “ANT # / TYPE” labelled header record.
Antenna serial number. (e.g. 318 in above sample)
The antenna type should comply with the antenna naming conventions in Reference Document 2 below. (e.g. AOAD/M_T in above sample)
- “ANTENNA: DELTA H/E/N” labelled header record.
The antenna height should be the vertical height of the GPS antenna reference point (ARP) above the station mark in metres. (e.g. 0.0070 in above sample) Reference Document 3 below shows the location of the ARP for most geodetic GPS antenna types.
- “APPROX POSITION XYZ” labelled header record.
The approximate position of the observation site should be contained in the RINEX file.
(e.g. -4052053.6361 4212836.6703 -2545107.5865 in above sample)
Coordinates from the receiver solution are precise enough as the initial coordinate values.
- “TIME OF FIRST OBS” labelled header record.
Same time as the first observation epoch. (e.g. 1999 10 7 0 12 0.000000 in above sample)
- “TIME OF LAST OBS” labelled header record.
Same time as the last observation epoch. This header record is optional and may not exist in all RINEX files.

Reference documents

1. The RINEX format (versions 2, 2.10, 2.11 & 3.00) specification is available at URL:
<ftp://igsch.jpl.nasa.gov/igsch/data/format/>
2. The receiver and antenna naming conventions used by IGS are available at URL:
ftp://igsch.jpl.nasa.gov/igsch/station/general/rcvr_ant.tab
3. The Antenna Reference Point (ARP), the bottom surface of the antenna to which antenna heights refer in RINEX files is shown in the antenna diagrams for most antenna types at URL:
<http://www.ngs.noaa.gov/ANTCAL/>