IGS antenna files

This file summarizes information concerning the various IGS antenna files available at ftp://igscb.jpl.nasa.gov/igscb/station/general/.

1) rcvr_ant.tab

purpose/content: IGS naming conventions for GNSS equipment (receivers, antennas, radomes, satellite antennas); only valid names to be used in IGS site logs, RINEX headers, SINEX files, etc.

responsibility: IGS Network Coordinator

contact: igscb@igscb.jpl.nasa.gov

requirements for new entries:

- geodetic equipment relevant to the IGS and users of IGS products with cm-level capabilities
- unique hardware model
- unique description
- unchangeable naming
- consideration of format specifications
- agreement with naming of calibration institutions, if possible
- authorization of manufacturer, if possible

checklist: http://igscb.jpl.nasa.gov/network/guidelines/rcvr_ant.chklst.html

2) igs05_wwww.atx (wwww = GPS week of the last file change)

(latest version is symbolically linked to the generic filename **igs05.atx** for convenience)

purpose/content: absolute IGS phase center corrections for satellite and receiver antennas; to be used with the IGS05 terrestrial reference frame which is aligned to, but not identical with ITRF2005 that is based on relative antenna phase center corrections

responsibility: IGS Antenna Working Group

contact: igs-awg@igscb.jpl.nasa.gov, schmid@bv.tum.de

requirements for new entries (receiver antennas):

- antenna name contained in rcvr_ant.tab
- definition of the corresponding antenna reference point (ARP) contained in antenna.gra, if possible
- consistent phase center offsets (PCOs) and variations (PCVs)
- consideration of ANTEX format specifications (e.g., IGS sign convention)
- availability of zenith- AND azimuth-dependent calibration values down to the horizon (with a resolution of at least 5 and 10 degrees, respectively)

- in order to guarantee high accuracy for low elevations, the antenna should be tilted during the calibration procedure
- addition of calibrations not matching the above criteria is only possible in a few exceptional cases (e.g., if a calibration for a combination of an antenna with a specific radome became available whose effect was ignored within the IGS before then)
- replacement of existing values is only allowed in a few exceptional cases (e.g., major model update, reference frame change, etc.) after consulting the IGS Reference Frame Working Group
- radome calibrations can only be added for combinations that are not (yet) in use within the IGS (otherwise the addition is a matter of a replacement, as the calibration for the antenna without the radome was used within the IGS before then)
- Geo++ GmbH only permits its type mean calibrations to be published in the public domain for the antenna types used within the IGS and EPN networks; calibrations for other antenna types are generally not openly available
- antenna manufacturers are encouraged to provide type mean calibrations for all their models using one of the available calibration services

where to get approvable calibrations?
(list will be extended as soon as additional institutions meet the requirements)

- Geo++ GmbH
  http://www.geopp.de/index.php?sprachauswahl=en&bereich=5&kategorie=34&artikel=
- Leibniz Universität Hannover, Institute of Geodesy
  http://www.ife.uni-hannover.de/forschung/schoen_kal_dienstleistung_e.html
- Senatsverwaltung für Stadtentwicklung Berlin, GNSS-Landeskalibriereinrichtung
  http://www.stadtentwicklung.berlin.de/geoinformation/landesvermessung/landeskalibriereinrichtung/de/kalibrierung_gnss.shtml

procedure for newly launched satellites:

- antenna name contained in rcvr_ant.tab
- as soon as launch date, satellite designations (PRN/SVN number, slot/GLONASS number, etc.) and COSPAR ID are known, a rounded block mean PCO is added together with the corresponding block mean PCVs, if available
- in the case of a new antenna/block generation, manufacturer values have to be applied for the PCO together with zero PCVs
- no earlier than six months after the satellite launch, the block mean PCO is replaced by an individual offset value from the combination of weekly IGS Analysis Center SINEX solutions
- PCVs for new satellite antenna type: procedure tbd.

intended procedure for major model update:

- compilation of an unofficial file containing the best possible receiver antenna corrections (regardless of any consistency problems)
- reprocessing campaign of the IGS Analysis Centers with receiver antenna corrections kept fixed
- estimation of consistent satellite antenna corrections (limited to the z-offsets so far) with the latest reference frame kept fixed
- release of the complete antenna phase center model together with the corresponding reference frame

3) igs_01.atx

purpose/content: relative IGS phase center corrections for satellite and receiver antennas (former IGS antenna model igs_01.pcv converted to ANTEX format)

responsibility: IGS Antenna Working Group

contact: igs-awg@igscb.jpl.nasa.gov, schmid@bv.tum.de

maintenance: no routine update procedure, updates only upon request

requirements for new entries (receiver antennas):

- antenna name contained in rcvr_ant.tab
- consideration of ANTEX format specifications (e.g., IGS sign convention)
- replacement of existing values is only allowed in a few exceptional cases (e.g., major model update, reference frame change, etc.)

4) igs_01.pcv

purpose/content: relative IGS phase center corrections for receiver antennas only (former IGS format)

file is no longer maintained!

5) antenna.gra

purpose/content: antenna reference point (ARP) definition, physical antenna dimensions

responsibility: IGS Network Coordinator

contact: igscb@igscb.jpl.nasa.gov

requirements for new entries:

- antenna name contained in rcvr_ant.tab
- authorization of manufacturer, if possible
- either an antenna drawing or the necessary information for the creation of the drawing have to be provided

6) antex13.txt

purpose/content: ANTEX format definition, IGS antenna file naming convention, IGS sign convention for PCOs and PCVs

responsibility: IGS Antenna Working Group

contact: igs-awg@igscb.jpl.nasa.gov, schmid@bv.tum.de