**DRAFT**

**Overview of Current GTDS Measurement Processing Options**

**With Sample Use Cases**

**Overview:**

The most common method to specify the observation correction options is via the use of the OBSCORR (observation correction) keycard. This is done in the DMOPT (data management options) subdeck. This option will apply the corrections to all data in the DC run if the correction selection is in the first real field. The format of this option is as follows:

**Example – Use of OBSCORR card:**

Minimum angle for refraction corrections calculation (normally data is elevation edited in FDF at 6.0 deg) dede)degrees)

Use numerical integration with the Bent ionospheric model

0---+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----8----+

DMOPT

OBSCORR 1 1 1 11122. 6.0

WORKIONO 1 1

The IJKLM field here is defined as (1=On,2=Off):

I = light time correction

J = ionospheric correction

K = tropospheric correction

L = antenna refraction correction

M=transponder delay correction

Frequency at which obs. corrections are applied by iteration (1=all)

Iteration number at which the first set of observation corrections are applied (1=first)

The corrections applied to the data may vary by data type. For instance, the Air Force typically applies corrections for refraction at the site before the data is sent to FDF. If it is already applied, it should not be applied again.

A typical observation correction setting in FDF is 11122 or 11121. This indicates that the light-time correction is applied, as well as both the ionospheric and tropospheric corrections. The antenna refraction correction is typically not corrected. The transponder delay correction is not applied here. A typical GTDS run the transponder delay is measured pre-launch and added to the FDF database. Then it is retrieved and used in data processing.

When applying an ionospheric correction, the WORKIONO keycard is needed to indicate which model (Bent =1 or Novak =2) in the second integer field and whether the file should be deleted at the end of the run (=1, the most common option) at the end of the run. The file should only be kept if performing analysis on the value of the correction (=2). Or another option in the first integer field is to reuse an earlier saved file (=3).

The observation corrections can also be specified by individual station in addition to the OBSCORR card by use of the Station 6 keyword card. This card will override the OBSCORR settings (global) for the individual station.

**Example – Station 6 Card to Override Observation Corrections:**

*Transponder delay correction*

0 = ignore this field

1= apply correction

2=do not apply this correction

*Tropospheric correction*

0 = ignore this field

1= apply correction

2=do not apply this correction

*Ionospheric correction*

0 = ignore this field

1= apply correction

2=do not apply this correction

0---+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----8----+

DMOPT

/WS1S 6 1 1 1 2. 2.

*Antenna mount correction*

0 = ignore this field

1= apply correction

2=do not apply this correction

*Light-time correction*

0 = ignore this field

1= apply correction

2=do not apply this correction

The station 6 card syntax is as follows:

/aaaabbb6 – here aaaa is the station name, b is 3 blanks and the 6 is the station card 6 identifier (to complete a 8-character alphanumeric field)

Relativity corrections to the range are enabled by the RELVTY keyword card. An example setup is shown below.

**Relativity correction example:**

*Relativistic point mass acceleration*

= 0 do not compute the relativistic point mass acceleration

= 1 compute the relativistic point mass acceleration including

the relativistic Coriolis acceleration

= 2 compute the relativistic point mass acceleration excluding

the relativistic Coriolis acceleration

Default value = 0

0---+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----8----+

OGOPT

RELVTY 1 1 0

*Flag to activate debug*

= 0 do not activate debug

= 1 activate debug

Default value = 0

*Relativistic correction to observed range*

= 0 do not compute the relativistic correction to observed range

= 1 compute the relativistic correction to observed range

Default value = 0

**GTDS and Overriding Observation Standard Deviations and Biases:**

The default standard deviations by GTDS measurement type are shown in Tables A-2 below. Also the available corrections by GTDS measurement type are shown below in Table A-3.

The default standard deviations can be overwritten in GTDS by using the OBSDEV keycard. An example is shown below:

Override values (first integer field to first real field, second integer field correlates to value in second real field)

0---+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----8----+

DCOPT

OBSDEV 11 12 200. 300.

OBSDEV 14 15 250. 350.

Data type selections (from Table A-2 below)

Example of setting biases in a simulation run by station is shown below. The values can also be further altered by setting it for specific times to make it a time-dependent bias using the Station 5 card. Again here, the first integer field corresponds to the values in the first real field and the second integer field corresponds to the values in the second real field as the above example demonstrates.

/DS24 5 13 14 100. 100.0

/DS34 5 13 14 100. 100.0

/DS54 5 13 14 100. 100.0

Station 5 declaration

**Appendix A2. GTDS User’s Guide Observation Type Indicators**









