

Procedure 3.0

"Creating a GEO Tracking File"

PROCEDURE



1) Obtain the recent TLE from the GBS website (Special permission is REQUIRED)



2) Modified the file using the following format.

a) Name of File : GEOtrack_TLE.txt

b) In the line before the TLE data/numbers, add the name of the satellite to be tracked (GBS or ACTS). Only one satellite should be enter



3) Copy the GEOtrack_TLE.txt file into the subdirectory C:\GEOpropagator\Data.



4) Open Matlab and make the current directory "C:\GEOpropagator".



5) Type "Start_GEOtracker" in the Matlab Workspace



6) Enter the appropriate inputs on the GEOTrack_GUI (see Figure 1.)

7) Press the "Generate Tracking File" button on the GEOTrack_GUI

PROCEDURE

**GEO sgp4/sdp4 Propagator
Tracking File Generator**
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TLE Filename *Filename Stated in Step 1. Must be in the C:\GEOtracker\Data subdirectory.*

Satellite Name *Satellite name placed in the TLE filename text file just before the two line element set.*

Ground Station Designation

Latitude (deg)

Longitude (deg)

Altitude (m)

Start Time (dd mmm yyyy hh:mm:ss.ss)

Stop Time (dd mmm yyyy hh:mm:ss.ss)

Increment (minutes)

Press when ALL fields are complete.

Generate Tracking File *Format is CRITICAL!! Must follow given format exactly.*

Figure 1. GETtrack GUI

PROCEDURE



NOTE: When the Ground Station Designation is selected, the Latitude, Longitude, and Altitude fields are updated based on the data contained in the C:\GEOpropagator\Data\TES_Station.txt file (sample given below)

CLE

41.413

-81.8657

0.0257

HUM

18.14868

-65.83834

0.047549

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The tracking file **STNyydd_nn_ssss.trk** has the following format

STN is the value from the "Ground Station Designation" box

yy is the year for the start of the file

ddd is the day-of-the-year for the start of the file

nn is the number of days of data in the file

SSSS is the value from the "Satellite Name" file

.trk is the file extension, designating it as a tracking file.

The tracking file will be placed in the `C:\GEOpropagator\Data\` subdirectory.

PROCEDURE



Note: AT the end of each run the name of the tracking file will be shown on the Matlab Command window as *outfile3* and the epoch time of the TLE used is shown as *tle_epoch*.

Note: If this process is to be repeated, be sure to close the figure "GEOtrack_GUI_final" and start again with step 3. This will force the clearing of all variables for the next procedure.

Obtaining Two Line Element Sets

The ACTS TLE can be obtained from the Web site:
<http://www.celestrak.com/NORAD/elements/geo.txt>

To obtain the GBS TLE, see Roberto Acosta