Import Route File [NMEA/GGA]

This format allows the user to LOG actual field data in NMEA format and "play it back" using the simulator. Since this data typically is obtained from an actual (noisy) GPS receiver, the position data is not smooth. The Tapestry system must condition the data by using a cubic spline for smoothing. The spline is differentiated to obtain velocity, and acceleration. Jerk is constructed by first-differencing. Heading is aligned with the vehicle velocity vector.

Convention/Restrictions

- The data file you import must start at least 1 second into the simulated week. If there are data gaps, Build Scenario will interpolate using a Cubic Spline.
- NMEA Message Format.
  - Continuous GGA and at least one GPRMC are required. Time comes from GPRMC. If there is NO GGA data. Ellipsoid Altitude will be set to 0 (the Earths Surface).

An example of each type:

RMC,225446,A,4916.45,N,12311.12,W,000.5,054.7,191194,020.3,E*68

225446	Time of fix 22:54:46 UTC
A	Navigation receiver warning A = OK, V = warning
4916.45,N	Latitude 49 deg. 16.45 min North
12311.12,W	Longitude 123 deg. 11.12 min West
000.5	Speed over ground, Knots
054.7	Course Made Good, True
191194	Date of fix 19 November 1994
020.3,E	Magnetic variation 20.3 deg East
*68	mandatory checksum

GGA - Global Positioning System Fix Data

GGA,123519,4807.038,N,01131.324,E,1,08,0.9,545.4,M,46.9,M, , *42

123519	Fix taken at 12:35:19 UTC
4807.038,N	Latitude 48 deg 07.038' N
01131.324,E	Longitude 11 deg 31.324' E
1	Fix quality: 0 = invalid , 1 = GPS fix ,2 = DGPS
08	Number of satellites being tracked (ignored)
0.9	Horizontal dilution of position (ignored)
545.4,M	Altitude, Metres, above mean sea level
46.9,M	Height of geoid (mean sea level) above WGS84 ellipsoid

(empty field)	time in seconds since last DGPS update
(empty field)	DGPS station ID number

- Tapestry requires at least ONE RMC message with an “A” setting to construct the initial date and time.

- The GGA message is used for navigation as it contains the required ellipsoid altitude. If not present, Tapestry will constrain the vehicle to the earth’s surface.

- The NMEA time string supplies UTC time, while Tapestry requires GPS time. Tapestry equates the two times when imported using the NMEA time as if it was GPS time.