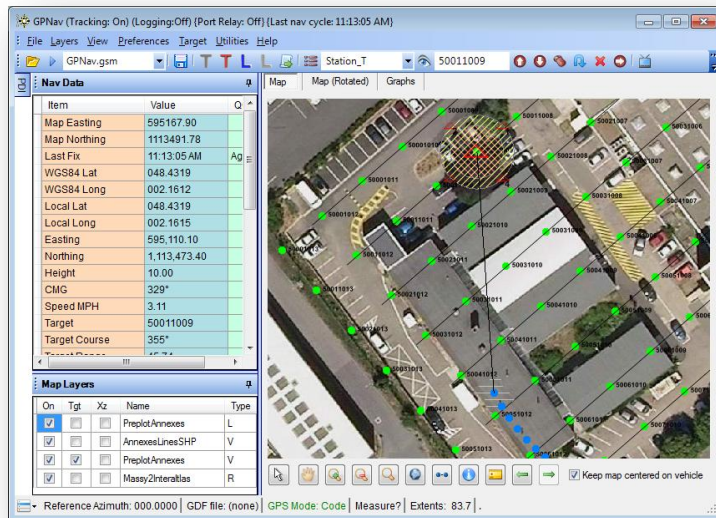


GPNav by Dynamic Survey Solutions, Inc.

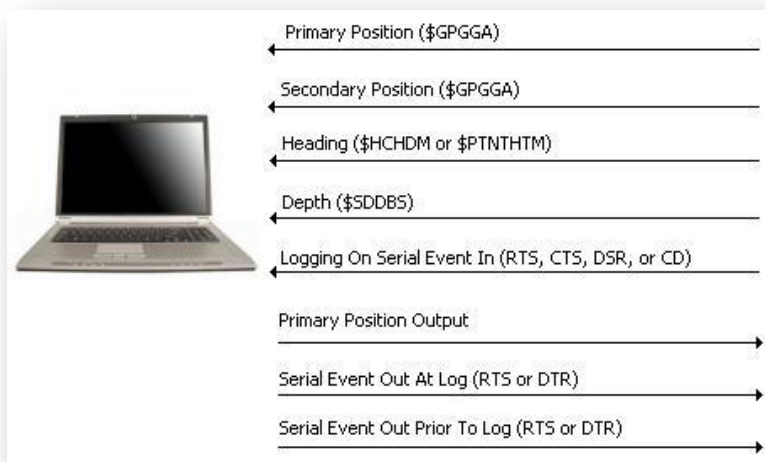
GPNav is a vessel navigation application written by **Dynamic Survey Solutions, Inc.** the authors of **GPSeismic**[®] and is a Windows[®] XP (SP2 and SP3), Vista and Windows 7 (32 and 64 bit) compatible program.



GPNav is vehicle tracking application with sophisticated logging routines and outstanding mapping capabilities. Up to 100 map layers are supported and can consist of point, line and polygon SHP files, or TIFF, JPG and BMP raster images.

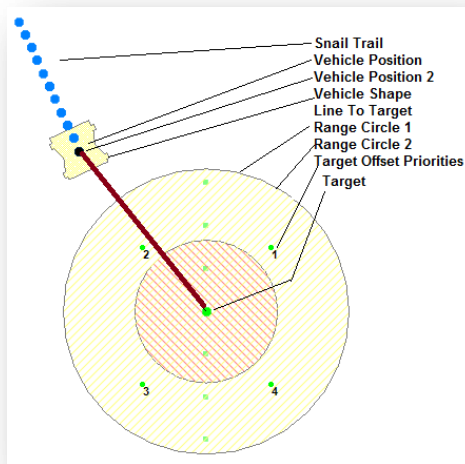
I/O

GPNav supports real time tracking using either NEMA \$GPGGA or Trimble GGK serial inputs. A second comm port optionally allows for a NMEA \$HCDM or \$PTNHTM magnetic heading messages. A third port can be opened for inputting a NMEA \$SDDBS depth message. A fourth port can be opened which



represents a secondary NMEA \$GPGGA position or you may define a secondary position by offsets from the primary GPS position. You can log on an incoming serial comms event or you may send pre-log and at-log serial events out. You may also relay the primary position to a separate port. There is the capability of looking for several inputs on one port. There is an embedded simulator which can be used for training and configuration purposes.

Tracking



Besides displaying shape and raster image layers, GPNav can display up to nine tracking objects. All are highly configurable:

Primary and Secondary Vehicle Symbols - There are 10 symbols that can be selected and both size and color can be changed. The vehicle can be offset by user entered in-line and cross-line values. The reference azimuth for these offsets is either the CMG or an input heading.

Vehicle Shape - You can define the shape of the vehicle by using a unique shape builder dialog in which you enter in-line and cross-line values around an origin. The vehicle shape is rotated relative to the CMG or heading input if present.

Target - As with the vessel, there are 10 symbols that can be selected for the target and, both color can be changed.

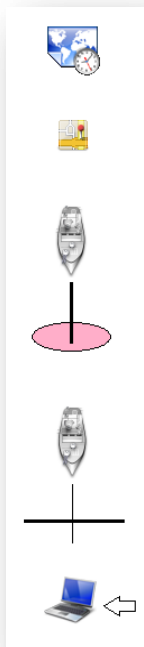
Line To Target - This can be changed with regards to width, style and color.

Target Offset Priority - You can display a set of symbols and numbers that indicate the order of preference for targeting. For example, perhaps the primary target position can't be reached. This could be used to display a second choice, a third choice and so on.

Snail Trail - The snail trail is the last twenty vehicle positions.

Range Circles - You can display up to two range circles. Either can be placed on target or vehicle. The color and fill type are user defined.

Logging



Logging can be initiated on time...

..or on distance. One option for this mode is to raise the specified line on the specified port with a specified distance to go.

Logging can also be configured when the vehicle is within the specified distance of the current target and a specified number of seconds has elapsed.

Logging can also be initiated when the inline distance to the target reaches zero (even if offline).

Finally, logging can be initiated by receipt of a signal on a serial comms input line.

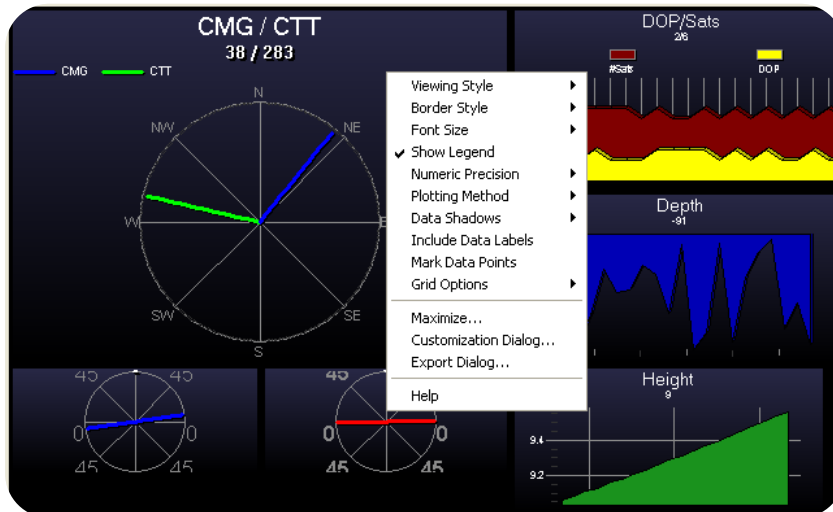
Navigation Data

Item	Value	QC
Map Easting	516,667.30	
Map Northing	1,964,257.74	
Last Fix	12:03:26 PM	Age: 1
WGS84 Lat	017.4653	
WGS84 Long	-092.4855	
Local Lat	017.4653	
Local Long	-092.4855	
Easting	519,571.72	
Northing	1,966,022.37	
Height	32.64	
Speed MPH	22.36	
CMG	155°	
Target	12875104	
Target Course	155°	
Target Range	745.47	
DOP	2	
#Sats	6	
GPS Mode	Code	
Log Mode	On time	1 to go
Last Log	12:03:22 PM	
Event Lines		
Depth	-176.47	
Pitch	3.52	
Roll	-32.51	
XZone	none	
Easting (2)	NA	
Northing (2)		
Height (2)		
Ruler		
Cursor Theoretical	12695050	
Nav Theoretical	12985099	
Cursor To Bin Center	23.44 @ 290°	
Nav To Bin Center	21.25 @ 139°	

The navigation data panel displays all relevant information concerning the vehicle. Row are colored for readability. The last column contains auxiliary information and is colored to represent an alert condition. Items include the following:

- ✓ The cursor location on map
- ✓ The non-offset WGS84 coordinates
- ✓ The local coordinates and height
- ✓ The speed and course
- ✓ The current target name and course to it
- ✓ The DOP, #Sats, and GPS mode
- ✓ The log mode and time of last log
- ✓ The event lines status
- ✓ The depth
- ✓ The pitch and roll
- ✓ The current status of the vehicle relative to exclusion zones
- ✓ The coordinates of the secondary position
- ✓ When ruler is active, range and bearing from point to cursor.
- ✓ The bin the cursor is in if a grid definition file is open
- ✓ Course to bin center from cursor if a grid definition file is open
- ✓ The bin the vehicle is in if a grid definition file is open
- ✓ Course to bin center from vehicle if a grid definition file is open

Graphs



Graphs include DOP, Satellites, Depth, Height, Course Made Good (or input heading), Course To Target, and Pitch and Roll. All graphs can be right-clicked to display a pop-up menu that allow it to be customized.