GTN 625/635/650 SOFTWARE v6.20
PILOT'S GUIDE UPGRADE SUPPLEMENT

This supplement contains the pages revised in the GTN 625/635/650 Pilot's Guide, P/N 190-01004-03, Rev L, regarding the new features of software v6.20. Change bars are placed adjacent to the revised information as described in the revision summary table.

This supplement, in combination with the GTN 625/635/650 Pilot's Guide, P/N 190-01004-03, Rev K, is equivalent to the GTN 625/635/650 Pilot's Guide, P/N 190-01004-03, Rev L.

Current documents are available at https://fly.garmin.com/fly-garmin/support/ for free download. Printed copies may be purchased by contacting Garmin Customer Support.

***NOTE**: Depending on which version of software is installed and how it is configured, the actual features and screen images may differ from what is shown. For more information regarding feature availability for specific software versions refer to the GTN 625/635/650 Pilot's Guide, P/N 190-01004-03.*

This manual reflects the operation of system software v6.20, or later. Some differences in operation may be observed when comparing the information in this manual to later software versions.

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GTN 625/635/650 Pilot's Guide Revision K, Change Summary

Section	Page	Description
Section 1 – Getting Started		
1.2.2	1-2	Added description of pinch-to-zoom feature to section.
1.3.1	1-3	Added Flight Stream 510 to section.
1.4.1	1-6	Added information about what displays on start-up screens.
		Updated SW & Database Versions & Dates and Panel Self-Test screen shots in figure 1-10.
1.4.2	1-7	Updated System Startup Pages screen shot in figure 1-11.
		Updated Instrument Panel Self-Test & Fuel Settings page screen shot in figure 1-12.
	1-8	Updated Fuel On Board page screen shot in figure 1-13.
		Updated Fuel Capacity page screen shot in figure 1-14.
	1-9	Updated Fuel Flow Setup page screen shot in figure 1-15.
Section 2 – Audio & Transponder Control		
2.3	2-10	Added "Telligence Voice Command" section.
Section 4 – Flight Plan		
4.3.6	4-30	Rewrote how to delete a flight plan.
4.3.6.2	4-31	Added "Delete All Flight Plans from Catalog" section.
4.6	4-37	Updated Catalog for Datacard Flight Plan Import screen shot in figure 4-73.
	4-38	Rewrote step 3 for clarity.
Section 5 - Direct-To		
5.2	5-3	Added information about Direct-To selection and flight plans.
Section 6 - Procedures		
6.9	6-16	Changed "Radial" to "Radius" in section heading.
Section 7 - Waypoint Info		
7	7-1	Updated Waypoint Info page screen shot in figure 7-1.
	7-2	Added VRP information to Waypoint Info Functional Diagram figure 7-2.
7.5	7-12	Added "VRP" section.
7.7.5	7-16	Added "Delete All User Waypoints" section.

Section	Page	Description
Section 8 - Map		
8	8-1	Added "Track vector" to bullet list.
8.1.2	8-8	Added "Track Vector Length" to Map list in figure 8-10.
		Added "VRP Range" to Aviation list in figure 8-10.
8.1.2.1	8-10	Added "Track Vector Length" to table 8-1.
	8-12	Added "Track Vector" section.
8.1.2.2	8-19	Added VRP Range to table 8-6.
8.1.3	8-28	Added Blackout Mode and Backlight to table 8-16.
8.6	8-38	Added User Waypoint and VRP icons to table 8-18.
8.7.2	8-40	Added information on how to select a Hot Spot and updated SafeTaxi Hot Spot Depiction screen shot in figure 8-47.
8.8	8-41	Added "Flight Plan Depiction" section.
Section 10 - Terrain		
10.2.3	10-2	Rewrote section in its entirety.
Section 11 - Weather		
11.3.3.1	12-59	Added a note about auto request can only be enabled on a GTN directly connected to a GSR 56.
Section 12 - Nearest		
12	12-1	Added "VRPs" to first sentence of section.
		Updated Nearest page screen shot in figure 12-1.
		Added VRP to figure 12-2.
12.5	12-6	Added "Nearest VRP" section.
Section 15 - System		
15	15-2	Added Voice Command function to figure 15-2.
15.1.3	15-4	Rewrote section for clarity.
15.6	15-28	Added Blackout Mode and Backlight to table 15-10.
15.11	15-35	Rewrote section for clarity and updated screen shots to include Flight Stream 510.
15.11.1	15-37	Added Connext SMS and phone feature for Flight Stream units.
15.13	15-40	Added "Voice Command" section.

Section	Page	Description
Section 17 - Symbols		
17.1	17-1	Updated table 17-1 with current map symbols.
17.2	17-2	Updated Under Construction Zones symbol in table 17-2.
		Added Hot Spot symbol to table 17-2.
Section 18 - Appendix		
18.1	18-8	Added VRP to glossary.
18.2	18-9	Rewrote section for clarity and included wireless database transfer procedure, and database sync sections.
18.5	18-23	Added "Telligence Voice Command Qualification Procedure" section.

Pilots will enjoy the GTN 625 as a flexible and powerful navigator, especially when it is coupled with traffic, lightning detection, and weather interfaces. With the PC-based FDE prediction program, the GTN 625 may be used for oceanic or remote operations. For the latest in graphic and text weather information, the GTN 625 can interface to the SiriusXM Weather Service via the Garmin GDL 69/69A datalink receiver.

1.1.2 GTN 635

The GTN 635 includes all of the features of the GTN 625, and also includes a TSO'd airborne VHF communications transceiver.

1.1.3 GTN 650

The GTN 650 includes all of the features of the GTN 625, and also includes a TSO'd airborne VHF communications transceiver and TSO'd airborne VOR/ Localizer and Glideslope receivers.

1.2 About This Pilot's Guide

1.2.1 Conventions

Bold text indicates a control. The **small right** knob is the smaller, inner knob of the two concentric rotary knobs on the lower, right corner of the bezel. The **large right** knob is the larger, outer knob.

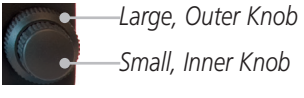


Figure 1-1 Large/Small Concentric Knobs

A graphic of a control on the side of the page refers to the control you should use for the associated step as shown below.

1.2.2 Using the Touchscreen

Most of the controls are operated by touching the display. Highlighted icons and keys may be simply touched to make a selection. A list of menu items may be scrolled by touching the screen and retaining pressure while sliding your finger up or down. Map displays may be panned by touching the screen and retaining pressure while sliding your finger in the desired direction. Pinch-to-zoom capability is available in software v6.20 or later.

You can return to the previous page or exit the current function by touching the **Back** key.

HOME

Quickly return to the Home page by pressing the **HOME** key. Press and Hold the **HOME** key to reach the Default Nav page.

1.3 Product Description

This section provides an overview of the GTN 6XX product and a quick look at some important features. The GTN 6XX presents a full-color moving map with navigation information to the pilot through a large-format display. Controls are a combination of rotary knobs and push-keys on the bezel with the color display providing information as well as a touchscreen controls. The GTN 6XX has a 600 x 266 pixel, 4.9 inch diagonal LCD display.

Figure 1-2 GTN 650 Front Panel

1.3.1 Datacard

The GTN 6XX uses a Secure Digital (SD) card or Flight Stream 510 to load and store various types of data. The datacard is required for Terrain, FliteChart, and Chartview database storage and all database updates.

***NOTE: Do Not** remove or insert the datacard while in flight. Ensure the GTN 6XX is powered off before inserting or removing a datacard.*

***NOTE:** For instructions on updating databases, refer to section 18.2.*

1.4 Unit Power Up

The GTN 6XX System is integrated with the aircraft electrical system and receives power directly from electrical busses. The GTN 6XX and supporting sub-systems include both power-on and continuous built-in test features that exercise the processor, memory, external inputs, and outputs to ensure safe operation.

1.4.1 Start-Up Screens

During system initialization, test annunciations are displayed. All system annunciations should disappear typically within the first 30 seconds after power-up. Upon power-up, key annunciator lights also become momentarily illuminated on the GTN 6XX display bezel.

The splash screen displays the following information:

- Copyright
- Database List and System version
- Instrument Panel Self-Test

Current database information includes valid operating dates, cycle number, and database type. When this information has been reviewed for currency (to ensure that no databases have expired), the pilot is prompted to continue. Databases that are not current will be shown in amber.

During the startup process the user may be asked if they would like to update to newer databases. Additional information on database updates can be found in section 18.2, Database Information and Updates.

The COM and NAV radios, transponder controls, and GDL 88 control panel are displayed on the Start-Up screens. Some functions may be unavailable until after the databases are verified.

1 - Copyright

2 - SW & Database Versions & Dates

3 - Panel Self-Test

Figure 1-10 System Startup Pages

1.4.2 Database Verification and Fuel Settings

Continue

1. When the System and Database Version page appears, ensure databases are current. Then, touch **Continue**.

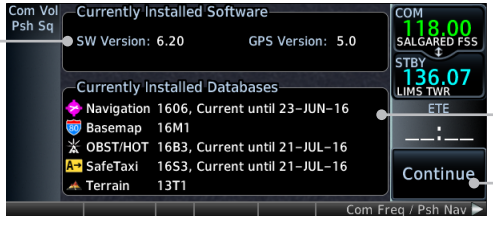


Figure 1-11 System Startup Pages

2. When the Instrument Panel Self-Test and Fuel Setting page appears, check to ensure that the CDI/HSI outputs and other displayed data are correct on the external interfaced equipment.

3. Touch each of the Fuel value keys and set the appropriate values as desired. Fuel capacity units are selected on the System - Units page.

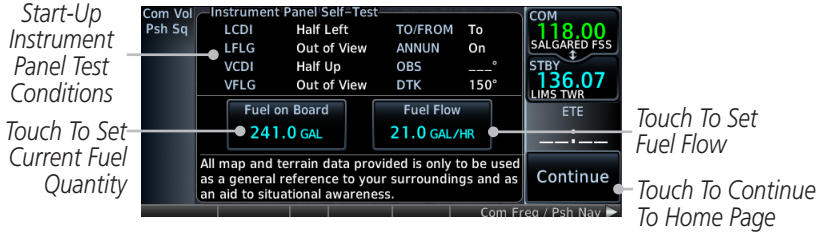


Figure 1-12 Instrument Panel Self-Test & Fuel Settings Page

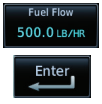
***NOTE**: When the GTN is interfaced with a digital fuel computer the pilot may not be able to manually edit the fuel flow and fuel on board data on the Self-Test.*

4. When the Fuel on Board value is selected, touch the **Full** or **Tabs** keys to display those values after they have been set.

Figure 1-13 Fuel On Board Page

5. Touch the **Set Full/Tabs** key to set the fuel values for Fuel Full Capacity and Fuel Tab Capacity. After setting the fuel values, touch the **Back** and then the **Enter** keys to return to the Instrument Panel Self Test page.

Figure 1-14 Fuel Capacity Setup Page



6. On the Instrument Panel Self Test page, touch the **Fuel Flow** key and then use the numeric keypad to set those values. Touch the **Enter** key after selecting the Fuel Flow values.

Figure 1-15 Fuel Flow Setup Page

7. After returning to the Instrument Panel Self-Test page and the fuel values have been set, touch the **Continue** key to advance to the Home page.

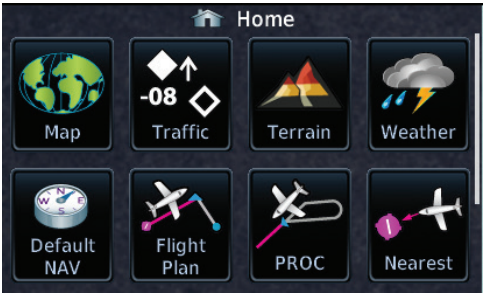


Figure 1-16 Home Page

2.3 Telligence™ Voice Command

Garmin's Telligence Voice Command voice recognition feature allows the pilot (and optionally copilot) to control the GTN 6XX connected to a GMA 350 using spoken commands. To activate Voice Recognition, push and hold the Push-to-Command (PTC) switch while speaking a command. When the Push-to-Command switch is released, the GTN 6XX and/or the audio panel will respond.

If a command is understood by the GMA, a positive acknowledgement chime will be played, and the relevant information will be displayed to reflect the change (if applicable). The pilot should verify that the correct response has occurred.

If a command is not understood by the GMA or the GTN is unable to complete the requested action, a negative acknowledge tone will be played. The pilot should repeat the command by using the Push-to-Command switch, or by manually using the GTN 6XX touch screen. In the event of any abnormal Voice Recognition operation, the front panel controls and touch screen may be used to override Voice Recognition and manually control the GTN 6XX.

NOTE: *If Telligence Voice Command malfunctions and needs to be disabled, remove power to the GMA 350 audio panel. This will force the audio panel into the fail-safe mode. The pilot will be able to communicate using the COM 2 radio only.*

The available voice recognition commands are listed in *GTN 6XX/7XX Telligence Voice Command Guide*, P/N 190-01007-50.

4.3.5.6 Catalog Route Option - Delete

1. While viewing the Flight Plan Catalog page, touch the desired flight plan to select it. The Route Options menu will be displayed.

Figure 4-57 Select Flight Plan from the Catalog to Delete

2. Touch the **Delete** key and then touch **OK**.

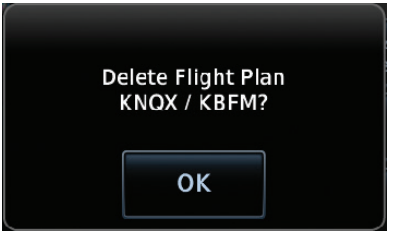


Figure 4-58 Delete the Selected Flight Plan from the Catalog

4.3.6 Delete Flight Plan

There are three ways to delete a flight plan.

1. Remove a selected flight plan from the catalog.
2. Remove all flight plans from the catalog.
3. Remove all waypoints from the active flight plan.

4.3.6.1 Delete Flight Plan from Catalog

1. While viewing the Flight Plan page, touch the **Menu** key, and then the **View Catalog** key. The list of currently stored flight plans will be displayed.

2. Touch one of the flight plans to select it.

Figure 4-59 Select a Flight Plan from the Catalog

3. Touch **Delete** and then the **OK** key. The selected flight plan will be removed from the Catalog.

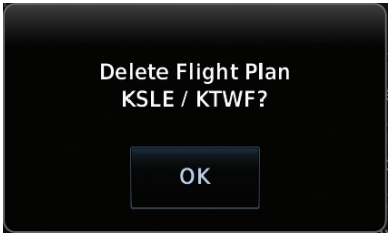


Figure 4-60 Delete a Flight Plan from the Catalog

4.3.6.2 Delete All Flight Plans from Catalog

NOTE: *This feature is available in software v6.20 or later.*

1. While viewing the Flight Plan Catalog, touch the **Menu** key to open the Flight Plan Catalog Menu.

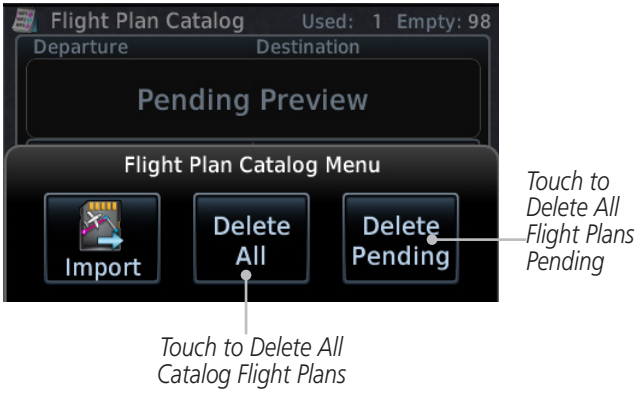


Figure 4-61 Flight Plan Catalog Menu

2. Touch **Delete All** to remove all flight plans in the catalog.

3. Touch **Delete Pending** to remove all flight plans pending preview in the catalog.

4.3.6.3 Delete Active Flight Plan

1. While viewing the Active Flight Plan page, touch the **Menu** key, and then the **Delete Flight Plan** key.

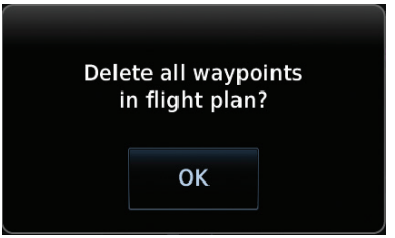
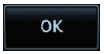


Figure 4-62 Delete a Flight Plan from the Active Flight Plan



2. Touch **OK** to clear the waypoints from the Active Flight Plan. The flight plan will not be removed from the Catalog.

4.6 Import Flight Plans with a Datacard

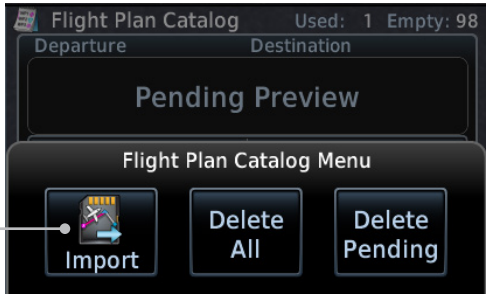
Flight plans can be created on a computer using compatible flight planning software and saved to the datacard to be imported into the GTN. The imported flight plans can then be activated or stored to the flight plan catalog once they are previewed by the pilot.

NOTE: *Flight plans over 99 waypoints long are truncated at 99 waypoints and the last waypoint in the imported/uploaded flight plan may not be the destination airport.*

NOTE: *This feature is available in software v5.10 and later.*

NOTE: *The flight plan file format used by the GTN is different than the file format used by the GNS 400W/500W Series navigators.*

1. While viewing the Flight Plan page, touch the **Menu** key and then the **Catalog** key to display the Flight Plan Catalog.



Touch To Import Flight Plan

Figure 4-73 Catalog for Datacard Flight Plan Import

2. An **Import** key will be present in the menu bar when flight plans are present on the datacard. Touch the **Import** key to open a pop-up with a list of the file names of the flight plans on the datacard.

Figure 4-74 Flight Plan To Import From Datacard

3. Select the desired flight plan to import.
4. Press **Store** to save the flight plan to the catalog. Press **Activate** to make the imported flight plan the active route.

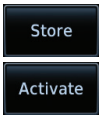


Figure 4-75 Route Options For Datacard Flight Plan Import

5.2 Direct-To a Flight Plan Waypoint

The Direct-To selection is not available for all flight plan entries. Some flight plans entries including holds and course reversals cannot be selected for Direct-To. Instead, select the associated waypoint for the Direct-To function.

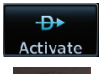
1. Press the **Direct-To** key on the right side of the unit.

2. Touch the **FPL** tab on the left side of the Direct-To window.

Figure 5-4 Direct-To Flight Plan Leg Selection

3. Touch the leg of your flight plan you want to use. The Direct-To Waypoint page will display information about the selected flight plan waypoint.

Figure 5-5 Selected Direct-To Flight Plan Leg



4. Touch the **Activate** key or press the **small right** knob to activate the selection.

5. The Map page will now be displayed with the new Direct-To course.

6.9 Radius-to-Fix (RF) Approaches

RF legs associated with RNAV RNP 1.0 non-AR (Approval Required) approaches are supported by the GTN in v6.00, or later, when approved by the installation.

- AC 90-101A defines RF leg as "a constant radius circular path, around a defined turn center, that starts and terminates at a fix. An RF leg may be published as part of a procedure."
- Flying the RF leg of an approach is similar to flying a DME arc approach. All GTN annunciations and indications are identical whether flying DME arcs or RF legs with the GTN.
- RF legs may have a larger or smaller radius than DME arcs.
- Unlike DME arcs, RF legs are not based on a VOR.
- Refer to the aircraft AFMS for specific details regarding RF legs for a specific aircraft.

6.10 Vectors to Final

With "Vectors-To-Final" (VTF) selected, the CDI needle remains off center until you're established on the final approach course. With the approach activated, the Map Page displays an extension of the final approach course in magenta (remember, magenta is used to depict the active leg of the flight plan) and "vtf" appears as part of the active leg on the Map page (as a reminder that the approach was activated with vectors-to-final).

NOTE: *In software v5.13 and earlier, once VTF is activated all waypoints in the approach prior to the FAF are removed.*

NOTE: *In software v6.00 and later, all waypoints along the final approach course, including waypoints before the FAF, are included in the flight plan and the final approach course to the FAF is activated.*

7 WAYPOINT INFO

The Waypoint Info function allows you to view information about the selected waypoint. The Waypoint Info page can be reached from the Home page, selected from a flight plan, or selected from the Nearest page.

Figure 7-1 Waypoint Info Page

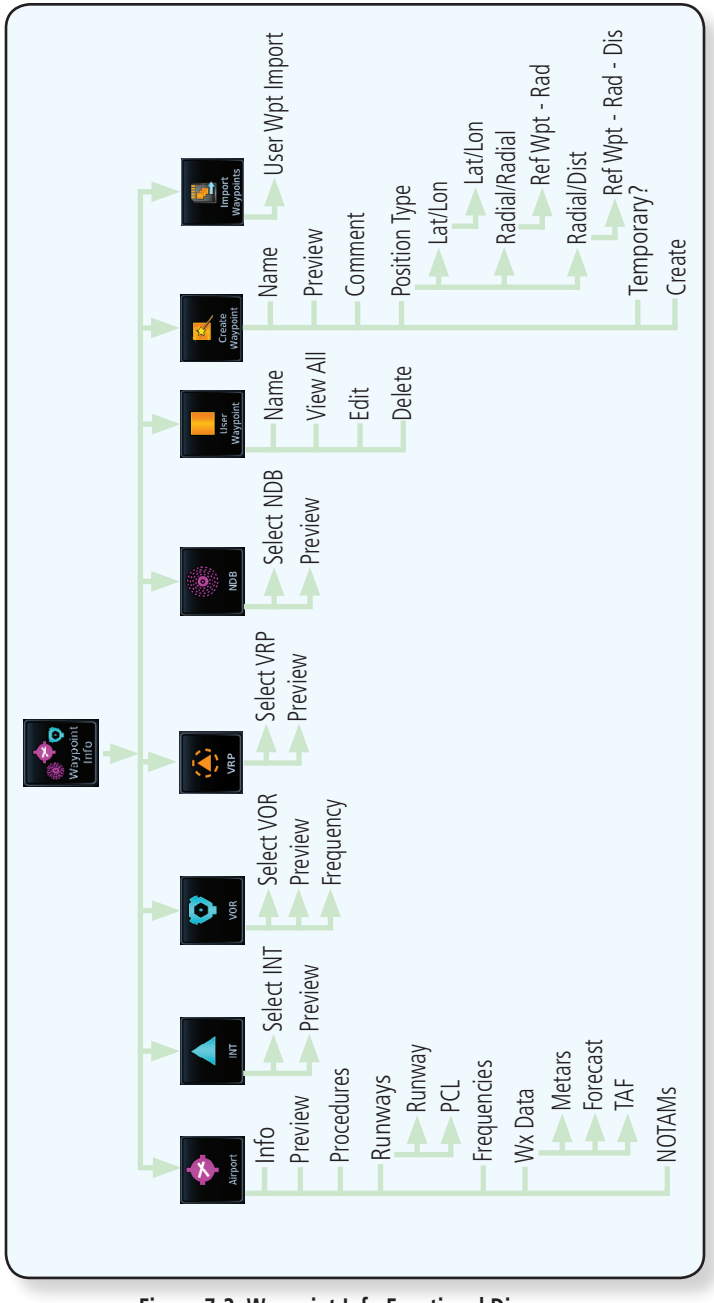


Figure 7-2 Waypoint Info Functional Diagram

7.5 VRP

NOTE: *This feature is available in software v6.20 or later.*

NOTE: *Visual Reporting Point database coverage is not available in all regions.*

The VRP (Visual Reporting Point) page of the Waypoint Info function provides information about the VRP. The top area shows the Lat/Lon coordinates of the VRP and the bearing (with direction arrow) and distance to the VRP from your present position. Select another Waypoint by touching the **Waypoint Identifier** key, entering the characters for the desired name with the alphanumeric keypad, and then touching the **Enter** key. You may also search through the list by touching the **Find** key and then choosing from the existing list of waypoints by touching the desired waypoint from the list. The center area of the page shows a map with the VRP in the center.

1. While viewing the Waypoint Info page, touch the **VRP** key.

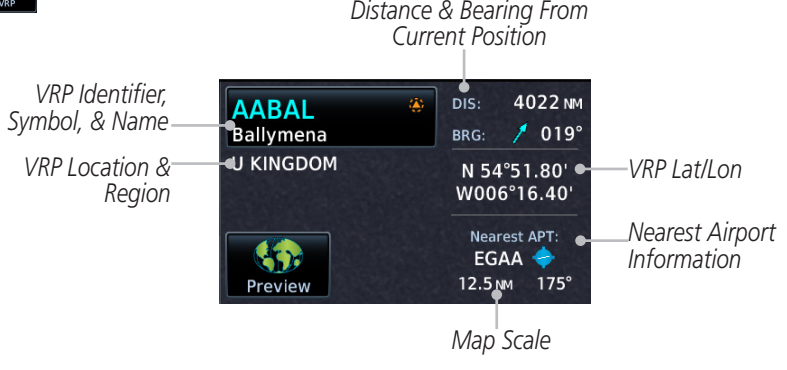


Figure 7-18 Waypoint Info - Visual Reporting Point

2. Use the **In** and **Out** keys to zoom in and out on the map. You can touch the map window and while lightly pressing the display, drag your finger to move the map view.

7.7.5 Delete All User Waypoints

1. While viewing the Wapoint Info page, touch the **User Waypoint** Key.

2. Touch the **View List** key and then touch the **Menu** key to open the User Waypoints Menu.

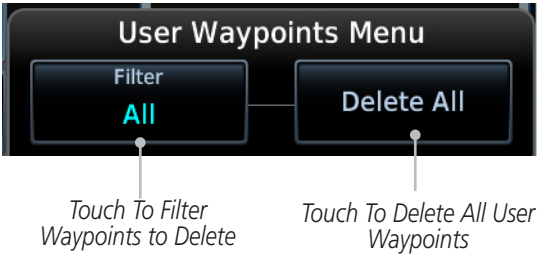
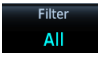
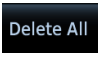


Figure 7-22 User Waypoints Menu



3. Touch the **Filter** key to select which type of user waypoints to delete: All, Basic, or Mark On Target.



4. Touch the **Delete All** key to delete all of the user waypoints.

8 MAP

The Map page is used to provide situational awareness in flight. The Map page can display the following information:

- Airports, NAVAIDs, airspace, airways, land data (highways, cities, lakes, rivers, borders, etc.) with names
- Wind direction and speed
- Icons for enabled map features
- Aircraft icon (with the nose representing present position)
- Nav range ring
- Flight plan legs
- Topography scale
- Topography data
- NEXRAD (or Precip) Weather (Opt.)
- Terrain Overlay
- Traffic Overlay
- Fuel range ring (software v6.00 or later)
- Track vector (SW v6.20 or later)

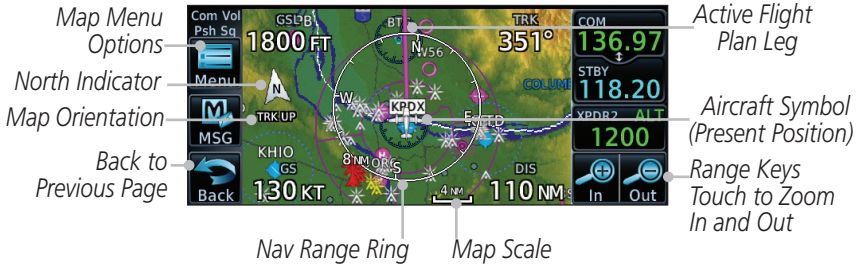


Figure 8-1 Map Page Description

NOTE: *The electronic map is an aid to navigation and is designed to facilitate the use of authorized government charts, not replace them. Land and water data is provided only as a general reference. The accuracy of the land and water data is not suitable for use as a primary source of navigation and should only be used to supplement official government charts and notices.*

The following information describes the ownship symbol behavior in a helicopter that does not have a source of magnetic heading information connected to the GTN. When greater than 15 knots groundspeed the map is oriented either north up with ownship oriented to its current track or track up. When less than 15 kts groundspeed, the directional ownship icon is replaced with a non-directional icon because it can't be determined if the rotorcraft is going sideways or backwards. The map will continue to orient to the current track if the map is selected

8.1.2 Map Setup

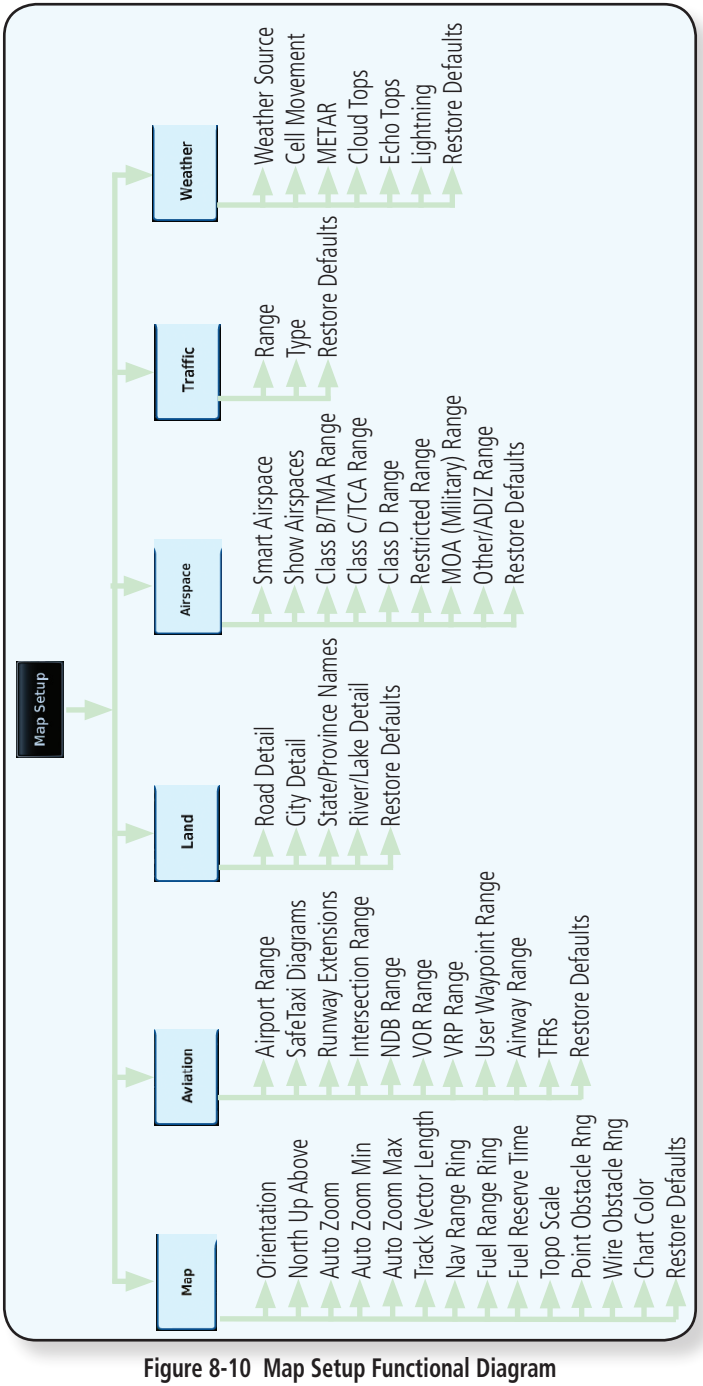


Figure 8-10 Map Setup Functional Diagram

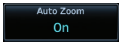
8.1.2.1 Map

The Map option defines the behavior and display of information on the Map page such as: Orientation, North Up Above, Auto Zoom, Nav Range Ring, Topo Scale, Obstacle Range, and Restore Defaults. The default values are shown in **bold** type.

Feature	Selection
Orientation	North Up, **Track Up**, Heading Up
North Up Above	Off, 10 NM, 15 NM, 25 NM, **40 NM**, 50 NM, 75 NM, 100 NM, 150 NM, 250 NM
Auto Zoom	Off, **On**
Auto Zoom Min	250 ft, 400 ft, 500 ft, 750 ft, 1000 ft, 1500 ft, 2500 ft, 0.5 NM, 0.75 NM, 1 NM, **1.5 NM**, 2.5 NM, 4 NM, 5 NM, 7.5 NM, 10 NM, 15 NM, 25 NM, 40 NM, 50 NM, 75 NM, 100 NM, 150 NM, 250 NM, 400 NM
Auto Zoom Max	250 ft, 400 ft, 500 ft, 750 ft, 1000 ft, 1500 ft, 2500 ft, 0.5 NM, 0.75 NM, 1 NM, 1.5 NM, 2.5 NM, 4 NM, 5 NM, 7.5 NM, 10 NM, 15 NM, **25 NM**, 40 NM, 50 NM, 75 NM, 100 NM, 150 NM, 250 NM, 400 NM
Track Vector Length	OFF, 30 SEC, **60 SEC**, 2 MIN, 5 MIN, 10 MIN, 20 MIN
Nav Range Ring	Off, **On**
Fuel Range Ring	**Off**, On
Fuel Reserve Time	30 MIN, **45 MIN**, 60 MIN, 90 MIN
Topo Scale	**Off**, On
Point Obstacle Range	Off, 4 NM, **5 NM**, 7.5 NM, 10 NM, 15 NM
Wire Obstacle Range	Off, 1 NM, **1.5 NM**, 2.5 NM
Restore Defaults	Returns values to original factory settings

Table 8-1 Map Setup Map Options

- a point is reached where the Auto Zoom range matches the manual override range (known as auto-sync) and will be noted as "Auto" above the map range value on the map page
- Auto Zoom is toggled off and back on in the Map Setup page



1. While viewing the Map Setup - Map selection, touch the Auto Zoom key to toggle it On or Off.
2. When Auto Zoom is On the Auto Zoom Min and Max values will be used.

NOTE: *Rotorcraft use a Local Auto Zoom function where Auto Zoom will remain at the 1500 ft zoom scale until the rotorcraft is above 400 ft GSL or 40 kts.*

Auto Zoom Min

Set the limit that the display will zoom in automatically.

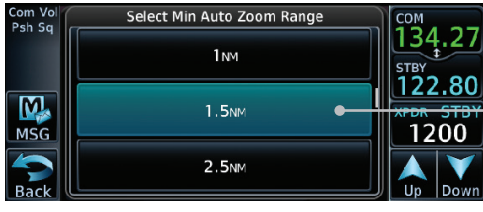


Figure 8-14 Map Setup Minimum Auto Zoom Range

Auto Zoom Max

Set the limit that the display will zoom out automatically.

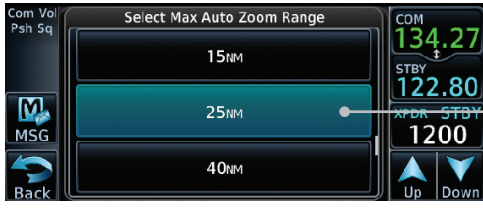


Figure 8-15 Map Setup Maximum Auto Zoom Range

Track Vector

NOTE: *This feature is available in software v6.20 and later.*

When turned on, the track vector is depicted as a cyan line extending from the nose of the aircraft in the direction of movement. The length of the track vector represents the path the aircraft will follow if the present speed and direction are maintained for the time configured in the Track Vector Length setting.

Track Vector

Figure 8-16 Track Vector

Nav Range Ring

When turned on, the Nav Range Ring option will show a ring with a compass rose oriented to magnetic north around your present position on the Map page.

Nav Range Ring

Current Position

Nav Range Ring Range

Figure 8-17 Nav Range Ring

Fuel Range Ring

NOTE: *This feature is available in software v6.00 and later.*

When interfaced with a fuel computer, the GTN can display a fuel range ring which shows an estimate of the remaining flight distance at the current fuel consumption rate and groundspeed. If either fuel quantity or fuel flow sensor data is not received, the GTN will use the Fuel on Board or Fuel Flow values on the Utilities – Fuel Planning page. If both fuel quantity and fuel flow are not received by the GTN, the Fuel Range Ring will be removed. A dashed green circle indicates the selected range to reserve fuel. A solid yellow circle indicates the total endurance range.

Total Endurance Range

Total Endurance Time

Time To Reserve Fuel

Range To Reserve Fuel

Figure 8-18 Fuel Range Ring

8.1.2.2 Aviation

The Aviation group selection from the Map Setup Page Menu allows you to customize the display of Active Flight Plan, Active Flight Plan Waypoints, Airport size range, SafeTaxi information, Runway Extensions, Intersection/NDB locations, VOR locations, Airspace Detail, and TFR icons on the Map page. The feature will be shown at map ranges of the selected value and lower. The options for each feature are shown in the following table. The default values are shown in **bold** type.

Feature	Selection
Airport Range	Off, 7.5 NM, 10 NM, 15 NM, **25 NM**, 40 NM, 50 NM, 75 NM, 100 NM, 150 NM
Heliports (Optional)	Off, **On**
SafeTaxi Diagrams	Off, 1000 ft, 1500 ft, 2500 ft, 0.5 NM, 0.75 NM, **1 NM**, 1.5 NM
Runway Extensions	Off, 1 NM, 1.5 NM, 2.5 NM, 4 NM, **5 NM**
Intersection Range	Off, 0.75 NM, 1 NM, 1.5 NM, 2.5 NM, **4 NM**, 5 NM, 7.5 NM, 10 NM
NDB Range	Off, 0.75 NM, 1 NM, 1.5 NM, 2.5 NM, 4 NM, **5 NM**, 7.5 NM, 10 NM
VOR Range	Off, **10 NM**, 15 NM, 25 NM, 40 NM, 50 NM, 75 NM, 100 NM
VRP Range	Off, 0.75 NM, 1 NM, 1.5 NM, 2.5 NM, **4 NM**, 5 NM, 7.5 NM, 10 NM
User Wpt Range	Off, 0.75 NM, 1 NM, 1.5 NM, 2.5 NM, 4 NM, **5 NM**, 7.5 NM, 10 NM, 15 NM, 25 NM, 40 NM, 50 NM, 75 NM, 100 NM
Airspace Detail	None, Least, Less, **Normal**, More, Most
Airway Range	2.5 NM, 4 NM, 5 NM, 7.5 NM, 10 NM, 15 NM, **25 NM**
TFR	**Off**, On
Restore Defaults	Returns values to original factory settings

Table 8-6 Map Setup Aviation Options

NOTE: *The term "intersection range" means any GPS waypoint included in the navigation database, and includes waypoints that may not be intersections of two VOR radials.*

Map Page Field Type	
Blackout Mode	Utilities - Utilities Page
DFLT NAV - Default Navigation	Checklist - Checklist Page
Flight Plan - Flight Plan Page	Fuel PLAN - Fuel Planning Page
Map - Map Page	SCHED MSG - Scheduled Messages
Nearest - Nearest Page	Trip PLAN - Trip Planning Page
NEAR APT - Nearest Airport Page	VCALC - VCALC Page
PROC - Procedures Page	User FREQ - User Frequencies
Approach - Approach Page	WPT INFO - Waypoint Information
Arrival - Arrival Page	Weather - Weather Page
Departure - Departure Page	CNXT WX - Connext WX Page
Backlight - Backlight Page	FIS-B WX - FIS-B Weather Page
Services - Services Page	Stormscope - Stormscope Page
Traffic - Traffic Page	SiriusXM WX - Sirius XM WX Page
Terrain - Terrain Page	OFF - Do Not Display Page Field

Table 8-16 Map Page Field Types of Information

8.1.4 Map Detail

The Map Detail feature allows four levels of decluttering to remove map information. The declutter level is displayed in the **DCLTR** key. There are four levels of decluttering. Level 0 shows the most detail and level 3 shows the least detail.

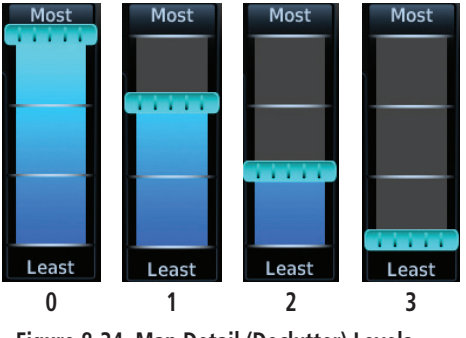


Figure 8-34 Map Detail (Declutter) Levels

8.6 Map Symbols

Various symbols are used to distinguish between waypoint types. The identifiers for any on-screen waypoints can also be displayed. Special-use and controlled airspace boundaries appear on the map, showing the individual sectors in the case of Class B, Class C, or Class D airspace. The following symbols are used to depict the various airports and navaids on the Map Page:

Symbol	Description
	Airport with hard surface runway(s); Serviced, Primary runway shown
	Airport with hard surface runway(s); Non-Serviced, Primary runway shown
	Airport with soft surface runway(s) only, Serviced
	Airport with soft surface runway(s) only, Non-Serviced
	Unknown Airport
	Restricted (Private) Airfield
	Intersection
	VOR
	VORTAC
	VOR/DME
	TACAN
	DME
	NDB
	Locator Outer Marker
	Heliport
	User Waypoint
	VRP

Table 8-18 Map Symbols

8.7.2 Hot Spot Information

Hot Spots can contain more information about the area that can be displayed when shown. To view more information touch the Hot Spot on the moving map.

Figure 8-47 SafeTaxi Hot Spot Detail and Outline

8.7.3 SafeTaxi® Cycle Number and Revision

The SafeTaxi database is revised every 56 days. SafeTaxi is always available for use after the expiration date. When turning on the GTN 6XX, the Power-up Page indicates whether the databases are current, out of date, or not available. The Power-up Page shows the SafeTaxi database is current when the "SafeTaxi Expires" date is shown in white. When the SafeTaxi cycle has expired, the "SafeTaxi Expires" date appears in yellow. The message "unknown" appears in white if no SafeTaxi data is available on the database card.

The SafeTaxi Region, Version, Cycle, Effective date and Expires date of the database cycle can also be found on the System - System Status page. SafeTaxi information appears in white and yellow text. The EFFECTIVE date appears in white when data is current and in yellow when the current date is before the effective date. The EXPIRES date appears in white when data is current and in yellow when expired. SafeTaxi REGION NOT AVAILABLE appears in white if SafeTaxi data is not available on the database card.

8.8 Flight Plan Depiction

When a flight plan is present, it will be depicted on the GTN maps.

Flight plan leg colors are used to indicate past, active, or future flight plan segments. A thin light gray line indicates a previous flight plan segment. A bold magenta line indicates an active flight plan segment for which the navigator is providing guidance. A bold white line indicates future flight plan segments. Missed approach procedures are depicted with a thin white line to indicate that they are an upcoming segment of the flight plan, but will not become navigable without the pilot specifically activating the missed approach procedure.

Flight plan labels are white boxes with black borders and black text to indicate they are fixes in the flight plan. If the waypoint is the ative waypoint in the flight plan, the border and text are magenta.

All holding patterns and procedure turns are depicted with the same coloration as all other flight plan segments. Entries are depicted with segmented arrows to indicate which direction in which the course guidance will be given. This is used for both hold entry and procedure turn course reversals. Once a hold becomes active the entry guidance is removed from the map and only the active hold is depicted.

Headings to fly are depicted as directional arrows with spaces between them and the label "Vectors" or "MANSEQ" to indicate what the pilot might expect while flying the heading depicted. "MANSEQ" is "Manual Sequencing" abbreviated and denotes that the procedure is complete upon reaching that heading and that no other guidance will be given from the navigator without pilot interaction.

The following illustrates the flight plan segments as presented on the GTN maps.

GTN provides guidance in the hold at WIGAN interseccion

Figure 8-48 Active Hold

In this case the teardrop entry for the hold at WIGAN is being depicted. Upon reaching the holding fix inbound, the entry arrows will be removed from the map and the dotted holding pattern will become active with magenta arrows.

Figure 8-49 Holding Pattern Entry

The active flight plan leg is WARIC to WHATE as indicated by the magenta line to the magenta labeled waypoint.

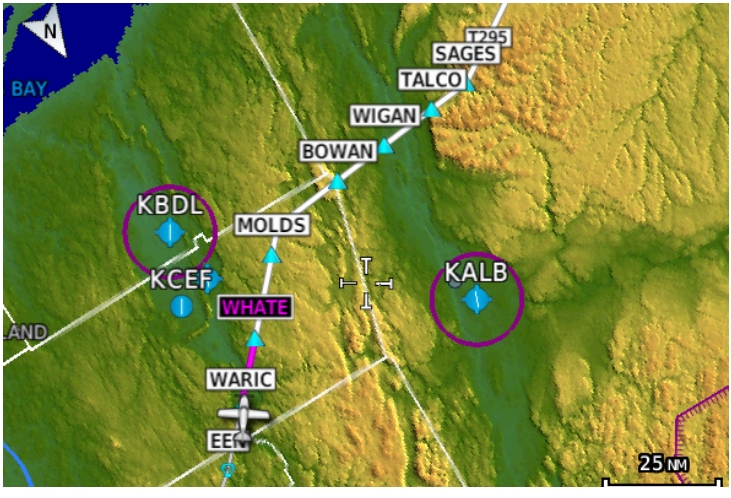


Figure 8-50 Active and Future Flight Plan Segments

The active leg is the course to OCITY intersection. After OCITY the flight plan depicts a turn to 100° for vectors.

Figure 8-51 Active Leg to Vectors

Previous legs are light gray, active leg is magenta.

Figure 8-52 Exiting the Hold

The leg outbound from LOS is active and indicates a procedure turn. When inbound from the procedure turn the inbound segment will become active and LSO will still be the active waypoint.

Figure 8-53 Active Procedure Turn

A flight plan along T295 with previous, the active leg, and the future legs depicted.

Figure 8-54 Past, Active, and Future Flight Plan Segments

Active Heading Leg

Figure 8-55 Active Heading Leg (Vectors)

Active Flight Plan Leg

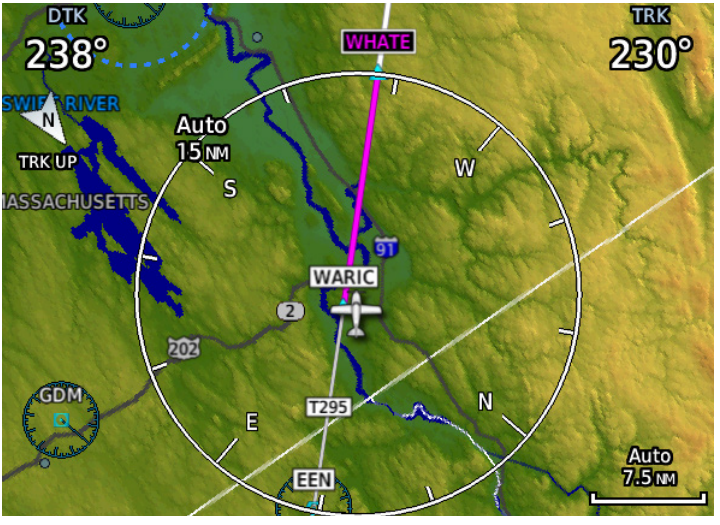


Figure 8-56 Active Flight Plan Leg

The active flight plan leg inbound to a holding pattern at WIGAN intersection.

Figure 8-57 Active Flight Plan Leg Prior to Holding Pattern

10.2 General Database Information

Garmin TAWS and HTAWS use terrain and obstacle information supplied by government and private sources. The data undergoes verification by Garmin to confirm accuracy of the content. ***However, the displayed information should never be understood as being all-inclusive. Pilots must familiarize themselves with the appropriate charts for safe flight.***

NOTE: *The data contained in the terrain and obstacle databases comes from government and private agencies. Garmin accurately processes and cross-validates the data, but cannot guarantee the accuracy and completeness of the data.*

10.2.1 Database Versions

The version and area of coverage of each terrain/obstacle database is shown on the System-System Status page. Databases are checked for integrity at power-up. If a database is found to be missing and/or deficient, the TAWS/HTAWS system fails the self-test and displays the TAWS/HTAWS system failure message.

10.2.2 HTAWS Database Requirements

To function properly, HTAWS requires the use of databases specific to helicopters and HTAWS. The databases required are:

- 2.5 arc-second Terrain Database
- Helicopter Obstacle Database
- Helicopter Navigation Database

10.2.3 Database Updates

For information on how to update databases, see section 18.2, Database Information and Updates.

11.3.3 Connext Settings

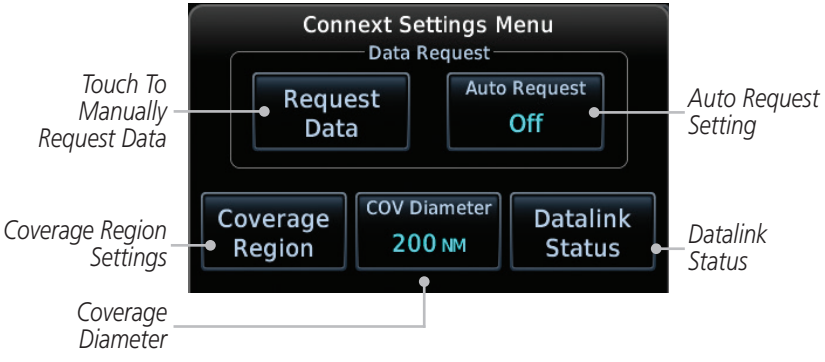
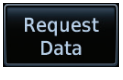


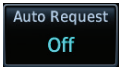
Figure 11-52 Connext Settings Menu

11.3.3.1 Connext Data Request

It is necessary to request the downloading of weather products. Requests can be sent manually or set to automatically update at a selected rate. The Connext weather data may be updated at any time regardless of the automatic update timing by selecting a Manual Request. When multiple requests are made, some products are merged with the old data (SIGMETs/AIRMETs, TAFs, TFRs, and METARs), but the old data of other products is discarded.



1. While viewing the Connext Settings Menu, touch the **Request Data** key to manually request data.



2. Touch the **Auto Request** key to set the Auto Request Period.

NOTE: *Auto Request can only be enabled on the GTN directly connected to the GSR 56.*

12 NEAREST

The Nearest function provides detailed information for the 25 nearest airports, VORs, VRPs, NDBs, Intersections and User waypoints within 200 NM of your current position. In addition, the Nearest pages include the five nearest Flight Service Station (FSS) and center (ARTCC/FIR) points of communication and alert you to any Special Use (SUA) or Controlled Airspace you may be in or near.

Figure 12-1 Nearest Page

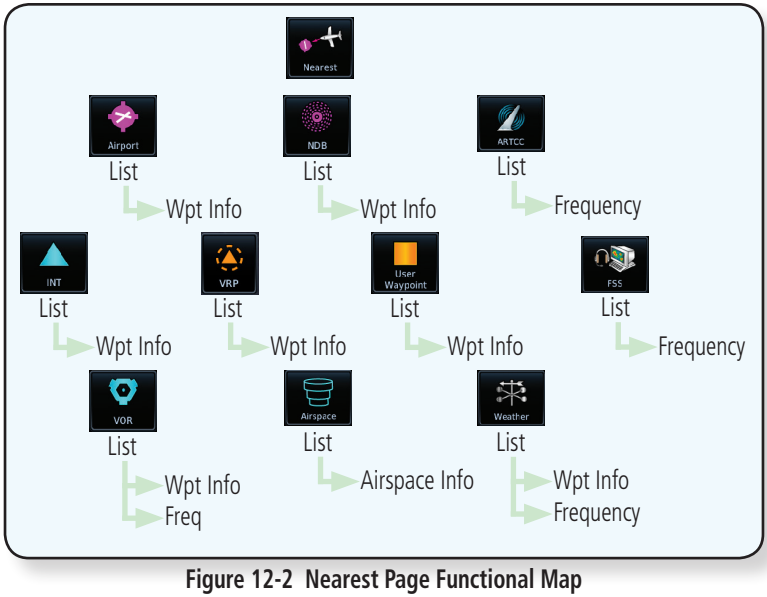


Figure 12-2 Nearest Page Functional Map

4. Touch the **Frequency** key on this page or from the Nearest VOR List page to place the selected frequency into the Nav Standby window. Touch the **Preview** key to view map detail.

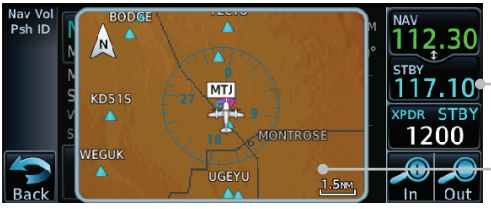


Figure 12-10 Nearest VOR Frequency Entry

12.5 Nearest VRP

NOTE: *This feature is available in software v6.20 or later.*

The nearest VRP Page displays the identifier, symbol, bearing, and distance to the 25 nearest VRPs (within 200 NM of your present position).

1. While viewing the Nearest function, touch the **VRP** key.

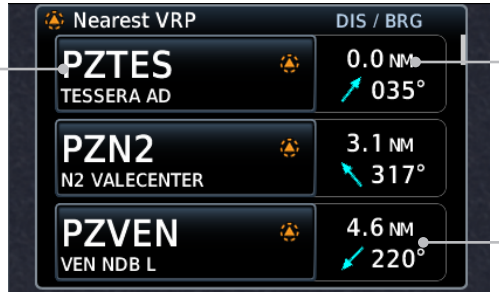
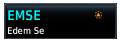


Figure 12-11 Nearest VRPs

2. Touch the **Up** and **Down** keys to scroll through the list.



3. Touch the **VRP Identifier** key to show the Waypoint Info page for the selected VRP.

Figure 12-12 Waypoint Info - Visual Reporting Point

12.6 Nearest NDB

The Nearest NDB Page displays the identifier, symbol, bearing, distance and frequency to the 25 nearest NDBs (within 200 NM of your present position).

1. While viewing the Nearest function, touch the **NDB** key. A list of the nearest 25 NDBs within 200 NM will be listed.

Figure 12-13 Nearest NDB

2. Touch the **Up** and **Down** keys to scroll through the list.

3. Touch the **NDB Identifier** key to show the Waypoint Info page for the selected NDB.

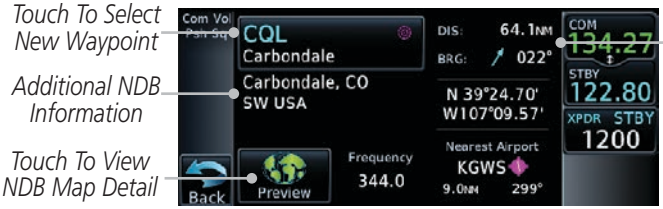


Figure 12-14 Nearest NDB Waypoint Information

Figure 15-2 System Function Summary

15.1.1 Serial Number and System ID

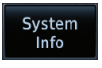
The System Info section shows the unit Serial Number and the System ID.

1. While viewing the System Status page, touch **System Info**.

2. Touch the **Back** key to return to the System Status page.

15.1.2 Version Information

The software versions of the GTN unit are displayed. This information is useful when contacting Customer Support.



1. While viewing the System Status page, touch the **System Info** key to view more detailed information about the software versions inside the GTN unit.

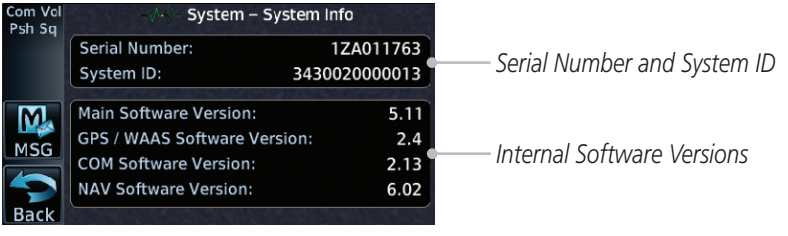


Figure 15-5 System Status Version Information

2. Touch the **Back** key to return to the System Status page.

15.1.3 Database Information

The Database Information section lists the name of the database, its version, and expiration date for the currently used databases, and also contains the Database SYNC function. Standby databases are listed for databases not currently used, but available on the data card. Database conflicts will be shown in the Conflicts section. For more information on GTN databases and how to update them see Section 18.2, Database Information and Updates.

Page Field Type	
Blackout Mode	Utilities - Utilities Page
DFLT NAV - Default Navigation	Checklist - Checklist Page
Flight Plan - Flight Plan Page	Fuel PLAN - Fuel Planning Page
Map - Map Page	SCHED MSG - Scheduled Messages
Nearest - Nearest Page	Trip PLAN - Trip Planning Page
NEAR APT - Nearest Airport Page	VCALC - VCALC Page
PROC - Procedures Page	User FREQ - User Frequencies
Approach - Approach Page	WPT INFO - Waypoint Information
Arrival - Arrival Page	Weather - Weather Page
Departure - Departure Page	CNXT WX - Connext WX Page
Backlight - Backlight Page	FIS-B WX - FIS-B Weather Page
Services - Services Page	Stormscope - Stormscope Page
Traffic - Traffic Page	SiriusXM WX - Sirius XM WX Page
Terrain - Terrain Page	OFF - Do Not Display Page Field

Table 15-10 Page Field Types of Information

15.10 Connext Setup - GSR 56

This page provides information about the GSR 56 and the Connext Registration page. See Section 15.3.3 - GSR 56 Status for more details.

1. While viewing the System page, touch **Connext Setup** to access the GSR 56 LRU Status page.

2. Touch **Connext Registration** to set up the Connext account. Follow the information provided in Section 15.3.3 - GSR 56 Status.

15.11 Connext Setup - Flight Stream 210 and 510

The GTN interfaces with the Flight Stream 210 Bluetooth transceiver and Flight Stream 510 wireless datacard. Using a Flight Stream and the GTN, flight plans are sent and received over Bluetooth. In addition, GPS position is provided from the GTN and attitude is forwarded from a connected GDU. The GTN can also configure the Flight Stream's Bluetooth.

The Flight Stream 510 also includes a Wi-Fi transceiver for updating databases. Refer to Section 18.2 for more information on updating databases with a Flight Stream 510. The GTN can configure the Flight Stream 510's Wi-Fi.

1. While viewing the System page, touch **Connext Setup** and then the **Flight Stream 210** or **Flight Stream 510** key.

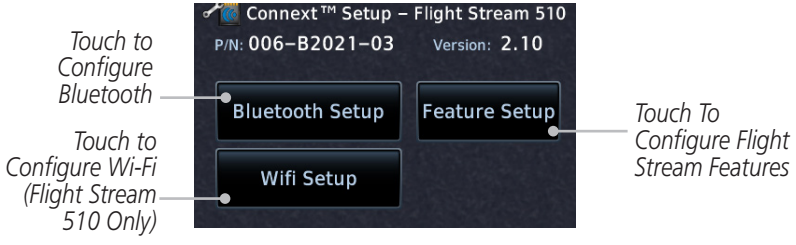


Figure 15-50 Connext Setup for Flight Stream 510

NOTE: *Turning Flight Plan imports off will remove the ability of the GTN to receive flight plans from the Flight Stream. This could be used if there are repeated erroneous attempts by a portable device application to send flight plans to the GTN.*

Bluetooth Setup

2. Touch the **Bluetooth Setup** key to manage the Bluetooth connection.

Figure 15-51 Bluetooth Setup for Flight Stream

3. Touch the **Wi-Fi Setup** key to manage the Wi-Fi connection.

Figure 15-52 Flight Stream 510 - Wi-Fi Setup

4. Touch the **Features** key to manage Flight Stream Features.

Figure 15-53 Flight Stream 510 - Features Setup

15.11.1 Operation

Data output from the GTN and Flight Stream occurs automatically and requires no pilot action (such as, flight plan, GPS position, and attitude). Additionally, ADS-B traffic and weather can be output from the Flight Stream when connected to a GDL 88 or GTX 345 and XM WX and SiriusXM satellite radio information can output when connected a GDL 69. From the Connext Setup page, the pilot can enable/disable flight plan importing, change the Flight Stream Bluetooth name, and manage paired devices. The Flight Stream 210 and 510 also support sending and receiving GSR 56 SMS messages and controlling the GSR 56 Iridium phone when used with a compatible portable application.

From the Connext Setup page, the pilot can enable/disable Flight Stream features (flight plan importing, phone/SMS, and database transfers), setup Flight Stream Bluetooth and Wi-Fi, and manage paired Bluetooth devices.

On the GTN's Paired Devices page, the device status indicates if the portable device is connected and communicating with the Flight Stream. The "Auto-Reconnect" setting determines if the Flight Stream will automatically connect to up to four devices when in range. When this setting is disabled, the pilot must initiate the connection from the device. For devices that always reconnect automatically, this setting will not be shown. Removing a device from this page by pressing "Remove" will require the device to be paired again before transferring data.

NOTE: *If the pairing is removed from either device (portable device or GTN) it must be removed on the other device before a new pairing to that same device is established again. Essentially, pairing must be removed on both devices before repairing.*

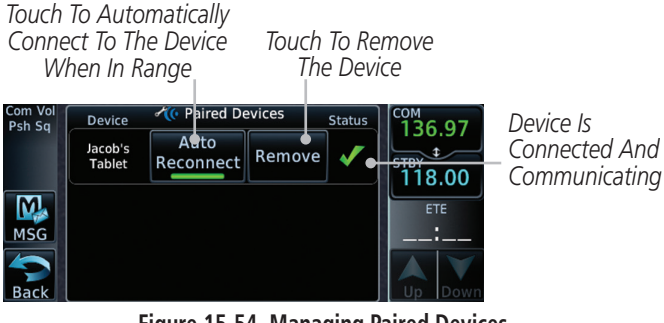


Figure 15-54 Managing Paired Devices

15.13 Voice Command

NOTE: *This feature is available in software v6.20, or later.*

The Voice Command page allows controlling the voice command function and viewing the voice command status and recent commands. Voice Commands are only available when connected to a compatible Garmin audio panel and when enabled by the installer.

Figure 15-57 Voice Command Setup

1. While viewing the System page, touch the **Voice Commands** key.

2. Touch the **Voice Command** key to toggle activation. A green bar will appear when voice commands are active.

3. Touch the **Command History** key to open a list of recently spoken commands.

Figure 15-58 Voice Command History

17 SYMBOLS

The following tables describe the symbols that are found on the Map display.

17.1 Map Page Symbols

Symbol	Description
	Airport with hard surface runway(s); Serviced, Primary runway shown
	Airport with hard surface runway(s); Non-Serviced, Primary runway shown
	Airport with soft surface runway(s) only, Serviced
	Airport with soft surface runway(s) only, Non-Serviced
	Unknown Airport
	Restricted (Private) Airfield
	Intersection
	VOR
	VORTAC
	VOR/DME
	TACAN
	DME
	NDB
	Locator Outer Marker
	Heliport
	User Waypoint
	VRP

Table 17-2 Map Page Symbols

17.2 SafeTaxi™ Symbols

Symbol	Description
	Helipad
	Airport Beacon
	Under Construction Zones
	Unpaved Parking Areas
	Hot Spot

Table 17-3 SafeTaxi Symbols

17.3 Traffic Symbols

TIS Symbol	Description
	Non-Threat Traffic
	Traffic Advisory (TA)
	Traffic Advisory Off Scale

Table 17-4 TIS Symbols

VNAV, VNV	vertical navigation
VOR	VHF Omni-directional Range
VORTAC	very high frequency omnidirectional range station and tactical air navigation
VRP	Visual Reporting Point
VS	Vertical speed
VSI	Vertical Speed Indicator
WAAS	Wide Area Augmentation System
WGS-84	World Geodetic System - 1984
WPT	waypoint(s)
WX	weather
XPDR	transponder
XTK	cross-track

18.2 Database Information and Updates

The GTN uses several databases to provide up-to-date aviation information. GTN databases can be updated by the pilot using an SD card or Flight Stream 510 wireless database card. The GTN can also synchronize databases in the cockpit with other displays using Database SYNC and Chart Streaming.

Information about the installed and standby databases can be viewed on the System Status page. Database SYNC and Chart Streaming can be configured in the menu on the System Status page.

The database card should not be removed except to update the databases stored on the card. For basic flight operations, a database card is required for database storage. The database cards cannot be shared between units.

18.2.1 GTN Databases

- **Navigation** - The navigation database contains information for waypoints and airports, such as procedures, runways, airways, airspaces, frequencies, and visual reporting points. For helicopter applications, a navigation database that includes additional heliports is available.
- **Basemap** - The Basemap database contains land and water data, such as roads, boundaries, rivers, and lakes.
- **SafeTaxi** - The SafeTaxi database contains detailed airport diagrams for selected airports. These diagrams aid in following ground control instructions by displaying the aircraft position on the map in relation to taxiways, ramps, runways, terminals, and services.
- **Obstacles** - The obstacle database contains data for obstacles, such as towers, that pose a potential hazard to aircraft. Obstacles 200 feet and higher are included in the fixed-wing obstacle database. The rotorcraft database includes all reported obstacles regardless of height. It is important to note that not all obstacles are necessarily charted and therefore may not be contained in the obstacle database. Several obstacle database options are available. Obstacle databases created for GTN software v5.10 or later include all power lines or only Hazardous Obstacle Transmission (HOT) lines depending on the type of obstacle database installed. HOT lines are those power lines that are co-located with other FAA-identified obstacles. The obstacle database is required for the TAWS and HTAWS functions.

- **Terrain** - The terrain database contains terrain mapping data. The terrain database is required for the TAWS and HTAWS functions. Systems using HTAWS require a 2.5 arc second database while non-HTAWS applications can use a 9 arc-second database.
- **FliteCharts** - FliteCharts resemble the paper version of AeroNav Services (Formerly named National Aeronautical Charting Office) terminal procedures charts. The charts are displayed with high-resolution and in color for applicable charts. The GTN depiction shows the aircraft position on the moving map in the plan view of the approach charts and on airport diagrams.
- **Chartview** - ChartView resembles the paper version of Jeppesen terminal procedure charts. The charts are displayed in full color with high-resolution. The GTN depiction shows the aircraft position on the moving map in the plan view of approach charts and on airport diagrams.

Database Name	Where Stored	Update Cycle	Provider	Notes
Navigation	Internal memory	28 days	fly.garmin.com	
Basemap	Internal memory	As required	fly.garmin.com	
SafeTaxi	Internal memory	56 days	fly.garmin.com	
Obstacle	Internal memory	56 days	fly.garmin.com	
Terrain	Database card	As required	fly.garmin.com	
FliteCharts	Database card	28 days	fly.garmin.com	Disables 180 days after expiration date.
Chartview	Database card	14 days	Contact Jeppesen	Disables 70 days after expiration date.

Table 18-1 Database List

NOTE: *Garmin requests that the flight crew report any observed discrepancies related to database information. These discrepancies could come in the form of an incorrect procedure, incorrectly identified terrain, obstacles and fixes, or any other displayed item used for navigation or communication in the air or on the ground. Go to www.flygarmin.com and at the bottom of the page select "Aviation Data Error Report."*

18.2.2 Updating Databases with a SD Card

To update the GTN database use an SD card. Instructions on updating the GTN database and the required equipment is found at *fly.garmin.com*.

The ChartView database is provided directly from Jeppesen. Contact Jeppesen (*www.jeppesen.com*) for ChartView subscription and update information. An enablement card that is purchased from Garmin is separate from the Jeppesen database and is required to enable ChartView.

1. Download the database updates to the Garmin Database Card from the appropriate website.
2. Insert the database card into the slot of the GTN.
3. Apply power to the GTN.
4. The database update page will be displayed, listing all effective database updates on the database card. Databases cycles that are not effective or already installed will be kept on the Garmin Database Card as standby databases until they become effective. Hold down the dual-concentric knob while applying power to the GTN to force the update of these databases.

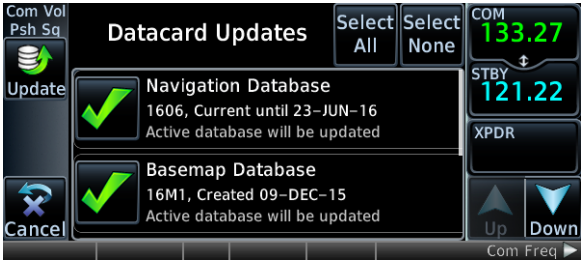


Figure 18-4 Updated Databases

5. Select the desired database updates and press the **Update** key.

NOTE: *Do not remove power to the GTN while updating databases.*

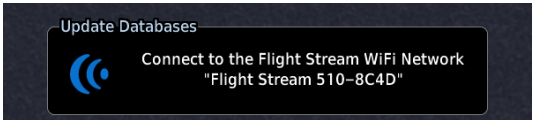
6. The GTN will begin the update process and then verify the integrity of the installed databases.
7. Check that all databases are current and there are no errors. If a database is highlighted in yellow, it is either expired or missing.

Figure 18-5 Currently Installed Software/Databases

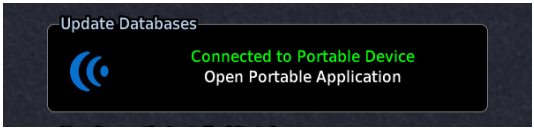
18.2.3 Updating Databases with a Flight Stream 510

GTN databases can also be updated using the Flight Stream 510 wireless database card with a portable device and the Garmin Pilot application.

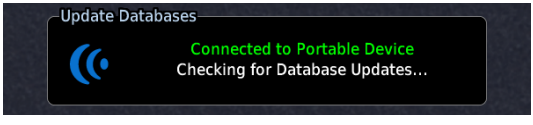
1. Follow the instructions within the app to purchase and download the database updates.
2. Ensure the Flight Stream 510 is inserted into the database card slot and apply power to the GTN.
3. When prompted on the database verification screen, connect the portable device to the Flight Stream 510 Wi-Fi network. The network name and password can be displayed by pressing the **Show WiFi Info** key.

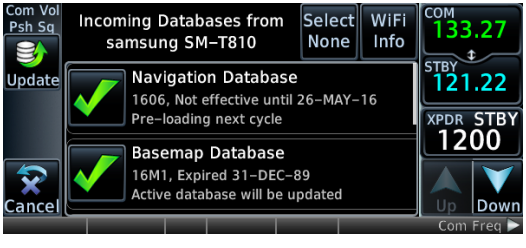


4. Once connected, open Garmin Pilot on the portable device.



5. The Flight Stream 510 will check for database updates on the portable device and display the database update page or notify the pilot that no database updates are available.





6. Select the desired database updates. All selected databases will be transferred to the GTN, but the GTN may choose to not install all databases. Database cycles that are not yet effective will be preloaded and kept as standby databases until they become effective. Databases that are not supported by this GTN may be transferred and then SYNC'd to other Garmin displays.

7. Press the **Update** key.

NOTE: *Do not remove power to the GTN while updating databases.*

8. The GTN will begin the transfer, update, and verification process. The terrain and charts databases can take up to 5 minutes each to transfer over Wi-Fi to the Flight Stream 510.
9. Check that all databases are current and there are no errors. If a database is highlighted in yellow, it is either expired or missing.

18.2.4 Database SYNC

Database SYNC allows the GTN to synchronize databases from a single unit to other Garmin avionics. The pilot only needs to update a single database card (SD card or Flight Stream 510) and the new databases are automatically SYNC'd through the units connected in the cockpit and configured for Database SYNC. Databases must be purchased for all avionics in the cockpit.

Database SYNC is supported by these database types:

- Navigation
- Basemap
- SafeTaxi
- Obstacle
- FliteCharts
- Airport Directory

The database SYNC process may take several minutes, depending on how many databases have been updated. The status of the database transfers to a unit can be viewed on the System Status page under the "Standby" tab. The GTN will display the source of the received databases (for example: "Database SYNC - GTN #2"). If a database SYNC is pending, completed, or not authorized, the status will also be indicated.

When the SYNC is complete, if the aircraft is stopped and has yet to takeoff, the pilot will be prompted with the option to restart and update to the newly transferred databases.

NOTE: *Restarting the GTN must only be performed when the aircraft is on the ground as navigation and communication from the restarted unit will be lost for a period of time.*

18.2.4.1 Resolving Database SYNC Conflicts

If the GTN determines that there are multiple LRUs with the newest cycle of a database, but they have different regions or types of that database (e.g., fixed wing vs. rotorcraft navigation database, different regions of the navigation database, or different obstacle database types) then a database conflict will occur. When a database conflict occurs, that database will not be SYNC'd until the pilot resolves the conflict. On the unit that has the desired databases to SYNC to the other units, press the **Resolve Conflicts** key that is located on the Conflicts tab of the System Information page.

18.2.5 Chart Streaming

While the Chart database is SYNCing in the background, the GTN will stream individual charts to other compatible displays. This enables all Garmin displays to use the latest chart database information even though the database is currently installed only on a single unit. Chart Streaming will begin after the chart database has begun SYNCing.

18.2.6 Database Troubleshooting Tips

Problem	Action
Unable to download databases to the SD card	• Ensure you have a high capacity SD card programmer • Ensure that your card programmer is plugged directly into your computer and not into a USB hub, computer screen, or keyboard • Ensure the sliding lock tab is in the unlocked position (up, when viewing the card label-side up)
Database update fails	• Restart the GTN and retry the update • Download the databases to the database card again • Ensure that the databases were purchased for the system ID of the GTN that the database card is being used to update
Database SYNC fails	• Ensure that the databases were purchased for all the GTNs and GDUs in the cockpit • Ensure that all conflicts have been resolved (section 18.2.4.1)
Database cannot be selected for update	• Restart the GTN while pressing the dual-concentric knob until the Garmin logo is fully illuminated to veiw all database updates on the database card, regardless of effectivity • Download the databases to the database card again • Ensure that the databases were purchased for the system ID of the GTN that the database card is being used to update
Database cannot be transferred to Flight Stream 510	• Ensure that the databases were purchased for the system ID of the GTN that the database card is being used to update • Ensure that the database transfers are enabled for the Flight Stream 510 (section 18.2.3) • Ensure that all database updates have been downloaded to the Garmin Pilot application • Press the Show All DBs key on the database verification page to veiw all database updates on the portable device, regardless of effectivity
Database is transferred to Flight Stream 510 but cannot be selected for update	• Ensure that the databases were purchased for the system ID of the GTN that the database card is being used to update • Ensure that the transferred database is currently effective • Restart the GTN while pressing the dual-concentric knob until the Garmin logo is fully illuminated to view all database updates on the Flight Stream 510, regardless of effectivity

Table 18-1 Database Troubleshooting Tips

18.5 Telligence Voice Command Qualification Procedure

In order to enable voice command functionality crew members must successfully perform and complete 17/20 (85%) voice commands in the Telligence aircraft qualification procedure. Crew members must be comfortable speaking into an aviation headset and proficient in English.

Voice Command Guidelines

NOTE: *If a voice command is uninterpretable, verify the system is performing the intended action or displaying the desired data. If the system does not recognize a command, use the touchscreen to execute the function. The GTN Voice Command History details all commands performed.*

- Position the headset MIC approximately 1/8-inch from mouth, align with bottom lip to avoid breath sounds in the microphone.
- Speak conversationally.
- Annunciate clearly.
- Speak in a normal tone and volume.
- Speak at a normal cadence (not too quickly or slowly).
- Pause briefly between activation of the PTC switch and when speaking the voice command.
- Review the commands prior to performing the qualification.

Voice Command Instructions

1. Press and hold the Push to Command (PTC) switch.
2. Speak the entire command into the headset MIC.
3. Release the "PTC" switch.
   - A positive tone (low-to-high) indicates a command is successfully executed. (i.e., page changed, radio tuned, MIC selected, etc.)
   - A negative tone (high-to-low) indicates the command is either unrecognizable or it's an invalid request.

Successful Command Example

If "show approaches page" is spoken and the approach selection page displays immediately then a positive tone will sound.

Unsuccessful Command Example

If "show map page" is spoken and the traffic page is displayed then a negative tone sounds.

Telligence Voice Command Qualification Procedure

Speak the unbold phrase if the voice command in this procedure is not applicable to the aircraft's configuration. If the total number of successful commands is less than 17 the voice commands must be disabled in configuration mode. This procedure is to be completed on the ground with the engine running.

Example: If the requirement states a COM radio is required, but your GTN does not a have a COM radio, use the unbold command.

1. Start the GTN and acquire a GPS position.
2. Conduct the voice commands in sequential order while wearing an aviation headset. If necessary, a command can be attempted twice.
3. When the command is successful check the box next to the command.

- ☐ **SHOW Flight Plan PAGE**

*** Manually enter a flight plan with a towered airport as the destination ***

- ☐ **SHOW Trip Planning PAGE**
- ☐ * **TUNE Nearest Ground** or SHOW Nearest Airport PAGE
- ☐ * **TUNE Nearest ATIS** or SHOW Nearest Weather Frequency PAGE
- ☐ † **TOGGLE COM 2** or SAY Distance
- ☐ **SHOW Map PAGE**
- ☐ **ZOOM OUT**
- ☐ **SAY Distance to Destination**
- ☐ **SHOW Flight Timers PAGE**
- ☐ † **SELECT COM 2** or SAY ETA at Destination
- ☐ **SAY Active Waypoint**
- ☐ **CREATE Waypoint Here**
- ☐ * **TUNE Destination Tower** or SHOW Destination Runways PAGE
- ☐ ‡ **SHOW Traffic PAGE** or SHOW Nearest PAGE
- ☐ **SHOW Procedures PAGE**
- ☐ **SHOW V-CALC PAGE**
- ☐ **SHOW Current Time**
- ☐ **SAY Desired Track**
- ☐ **BACK**
- ☐ **SHOW Voice Command History Page**

* A GTN COM radio is required.

† Two COM radios connected to the GMA are required.

‡ Traffic capability is required on the GTN.

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