GARMIN

G600

Pilot's Guide

This manual reflects the operation of System Software version 2.00, or later. Some differences in operation may be observed when comparing the information in this manual to later software versions.

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WARNING: *Navigation and terrain separation must NOT be predicated upon the use of the terrain function. The GDU 620 Terrain Proximity feature is NOT intended to be used as a primary reference for terrain avoidance and does not relieve the pilot from the responsibility of being aware of surroundings during flight. The Terrain Proximity feature is only to be used as an aid for terrain avoidance and is not certified for use in applications requiring a certified terrain awareness system. Terrain data is obtained from third party sources. Garmin is not able to independently verify the accuracy of the terrain data.*

WARNING: *The displayed minimum safe altitudes (MSAs) are only advisory in nature and should not be relied upon as the sole source of obstacle and terrain avoidance information. Always refer to current aeronautical charts for appropriate minimum clearance altitudes.*

WARNING: *The Garmin GDU 620 has a very high degree of functional integrity. However, the pilot must recognize that providing monitoring and/or self-test capability for all conceivable system failures is not practical. Although unlikely, it may be possible for erroneous operation to occur without a fault indication shown by the GDU 620. It is thus the responsibility of the pilot to detect such an occurrence by means of cross-checking with all redundant or correlated information available in the cockpit.*

WARNING: *The altitude calculated by GPS receivers is geometric height above Mean Sea Level and could vary significantly from the altitude displayed by pressure altimeters, such as the output from the GDC 74A Air Data Computer, or other altimeters in aircraft. GPS altitude should never be used for vertical navigation. Always use pressure altitude displayed by the GDU 620 PFD or other pressure altimeters in aircraft.*

WARNING: *Do not use outdated database information. Databases used in the G600 system must be updated regularly in order to ensure that the information remains current. Pilots using an outdated database do so entirely at their own risk.*

WARNING: *Do not use basemap (land and water data) information for primary navigation. Basemap data is intended only to supplement other approved navigation data sources and should be considered as an aid to enhance situational awareness.*

WARNING: *Traffic information shown on the GDU 620 Multi Function Display is provided as an aid in visually acquiring traffic. Pilots must maneuver the aircraft based only upon ATC guidance or positive visual acquisition of conflicting traffic.*

WARNING: *XM Weather should not be used for hazardous weather penetration. Weather information provided by the GDL 69/69A is approved only for weather avoidance, not penetration.*

WARNING: *NEXRAD weather data is to be used for long-range planning purposes only. Due to inherent delays in data transmission and the relative age of the data, NEXRAD weather data should not be used for short-range weather avoidance.*

WARNING: *For safety reasons, GDU 620 operational procedures must be learned on the ground.*

WARNING: *To reduce the risk of unsafe operation, carefully review and understand all aspects of the G600 Pilot's Guide. Thoroughly practice basic operation prior to actual use. During flight operations, carefully compare indications from the GDU 620 to all available navigation sources, including the information from other NAVAIDs, visual sightings, charts, etc. For safety purposes, always resolve any discrepancies before continuing navigation.*

WARNING: *Never use the GDU 620 to attempt to penetrate a thunderstorm. Both the FAA Advisory Circular, Subject: Thunderstorms, and the Airman's Information Manual (AIM) recommend avoiding "by at least 20 miles any thunderstorm identified as severe or giving an intense radar echo".*

CAUTION*: The United States government operates the Global Positioning System and is solely responsible for its accuracy and maintenance. The GPS system is subject to changes which could affect the accuracy and performance of all GPS equipment. Portions of the Garmin GDU 620 utilize GPS as a precision electronic NAVigation AID (NAVAID). Therefore, as with all NAVAIDs, information presented by the GDU 620 can be misused or misinterpreted and, therefore, become unsafe.*

***CAUTION**: The Garmin GDU 620 does not contain any user-serviceable parts. Repairs should only be made by an authorized Garmin service center. Unauthorized repairs or modifications could void both the warranty and the pilot's authority to operate this device under FAA/FCC regulations.*

***CAUTION**: The GDU 620 PFD and MFD displays use a lens coated with a special anti-reflective coating that is very sensitive to skin oils, waxes, and abrasive cleaners. CLEANERS CONTAINING AMMONIA WILL HARM THE ANTI-REFLECTIVE COATING. It is very important to clean the lens using a clean, lint-free cloth and an eyeglass lens cleaner that is specified as safe for anti-reflective coatings.*

***NOTE**: Interference from GPS repeaters operating inside nearby hangars can cause an intermittent loss of attitude and heading displays while the aircraft is on the ground. Moving the aircraft more than 100 feet away from the source of the interference should alleviate the condition.*

***NOTE**: All visual depictions contained within this document, including screen images of the GDU 620 bezel and displays, are subject to change and may not reflect the most current GDU 620 system. Depictions of equipment may differ slightly from the actual equipment.*

***NOTE**: This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.*

***NOTE**: This product, its packaging, and its components contain chemicals known to the State of California to cause cancer, birth defects, or reproductive harm. This notice is being provided in accordance with California's Proposition 65. If you have any questions or would like additional information, please refer to our web site at www.garmin.com/prop65.*

Record of Revisions				
Part Number	**Revision**	**Date**	**Page Range**	**Description**
190-00601-02	A B	6/10/08 7/8/08	All	Production release Update information

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Contents

1 SYSTEM OVERVIEW

1.1 System Description

This section provides an overview of the G600 Avionics Display System. The G600 system is an integrated display system that presents primary flight instrumentation, navigation, and a moving map to the pilot through large-format displays.

In normal operating mode, the Primary Flight Display (PFD) presents graphical flight instrumentation (attitude, heading, airspeed, altitude, vertical speed), replacing the traditional flight instrument cluster. The Multi-Function Display (MFD) normally displays a full-color moving map with navigation information.

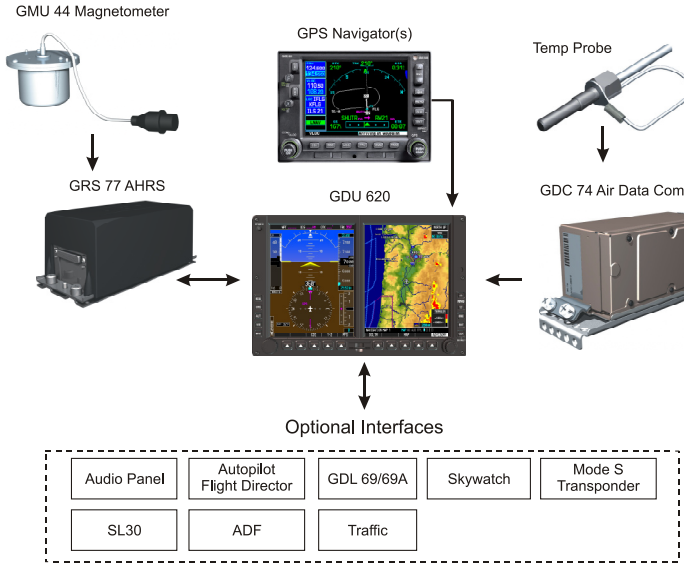

Figure 1-1 G600 System (LRU Configuration)

The system consists of the following Line Replaceable Units (LRUs):

- **GDU 620** Primary Flight Display (PFD) and Multi Function Display (MFD)
- **GDC 74A** Air Data Computer (ADC)
- **GRS 77** Attitude and Heading Reference System (AHRS)
- **GNS 480, CNX80, GNS 400W series, or GNS 500W series** GPS

Navigator

- **Temperature Probe** (such as the GTP 59)
- **GMU 44** Magnetometer
- **GTX 330/330D** Mode S Transponder (optional)
- **GDL 69A** Satellite Data Link Receiver (optional)
- **SL30 NavCom** (optional)
- **Autopilot** (optional)
- **ADF** (optional)
- **Traffic** (optional: TAS and TIS)
- **Audio Panel** (optional)

1.1.1 Line Replaceable Units (LRU)

This guide covers the operation of the GDU 620 as integrated in the G600 system. The G600 Avionics Display System is an advanced technology avionics suite designed to replace the traditional flight instrument cluster. The system combines primary flight instrumentation, navigational information, and a moving map all displayed on dual 6.5" color screens. The G600 system is composed of sub-units or Line Replaceable Units (LRUs). LRUs have a modular design and can be installed directly behind the instrument panel or in a separate avionics bay if desired. This design greatly eases troubleshooting and maintenance of the G600 system. A failure or problem can be isolated to a particular LRU, which can be replaced quickly and easily. Each LRU has a particular function, or set of functions, that contributes to the system's operation.

1.1.2 GDU 620

The GDU 620 has dual VGA (640 x 480 pixels) 6.5-inch LCD displays. The left side of the GDU is a PFD and the right side is the MFD. The MFD shows a moving map, flight plan, weather, and more. The PFD shows primary flight information, in place of traditional pitot-static and gyroscopic systems and also provides an HSI for navigation. The GDU 620 PFD does not have a reversionary mode.

Figure 1-2 GDU 620 PFD and MFD

1.1.3 GDC 74A

The GDC 74A air data computer compiles information from the pitot/static system and an outside air temperature (OAT) sensor. The GDC 74A provides pressure altitude, airspeed, vertical speed, and OAT information to the G600 system. The GDC 74A communicates with the GDU 620 and GRS 77 using an ARINC 429 digital interface.

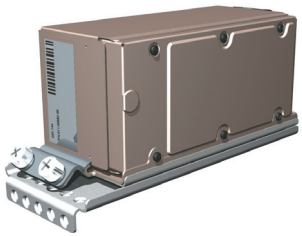

Figure 1-3 GDC 74A Air Data Computer

1.1.4 GRS 77

The GRS 77 is an Attitude and Heading Reference System (AHRS) unit that provides aircraft attitude information to the G600 display. The unit contains advanced tilt sensors, accelerometers, and rate sensors. In addition, the GRS 77 interfaces with both the GDC 74A Air Data computer and the GMU 44 magnetometer. The GRS 77 also utilizes GPS data forwarded from the GDU 620. Actual attitude and heading information is sent using an ARINC 429 digital interface to the GDU 620.

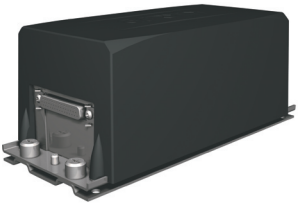

Figure 1-4 GRS 77 AHRS

The IGRF (International Geomagnetic Reference Field) model is contained in the GRS 77 and is only updated once every five years. The IGRF model is part of the Navigation Database. At system power-up, the IGRF models in the GRS 77 and in the Navigation Database are compared, and if the IGRF model in the GRS 77 is out of date, the user is prompted to update the IGRF model in the GRS 77. The prompt will appear after the G600 splash screen is acknowledged on the MFD.

1.1.5 GMU 44

The GMU 44 magnetometer senses the earth's magnetic field. Data is sent to the GRS 77 AHRS for processing to determine aircraft magnetic heading. This unit receives power directly from the GRS 77 and communicates with the GRS 77 using a RS-485 digital interface.

Figure 1-5 GMU 44 Magnetometer

1.1.6 GTX 330/330D (Optional)

Figure 1-6 GTX 330/330D Mode S Transponder

The GTX 330/330D is a solid-state transponder that provides Modes A, C, and S functions. The transponder provides traffic information to the display through an ARINC 429 digital interface.

NOTE: *GTX 33/33D can also be used to display traffic information on the GDU 620. GTX 33/33D transponders must be interfaced to a GNS 480 for mode control and squawk code entry.*

1.1.7 GTP 59

A temperature probe provides Outside Air Temperature (OAT) data to the on-side GDC 74A. The GTP 59 is an example of an appropriate temperature probe.

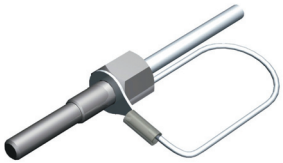

Figure 1-7 GTP 59 Temperature Probe

1.1.8 GDL 69/69A (Optional)

The GDL 69/69A is an XM Satellite Radio data link receiver that receives broadcast weather data. The GDL 69A is the same as the GDL 69 with the addition of an XM Satellite Radio audio entertainment receiver. Weather data and control of audio channel and volume is displayed on the MFD, via a High-Speed Data Bus (HSDB) Ethernet connection. The GDL 69A is also interfaced to an audio panel for distribution of the audio signal. A subscription to the XM Satellite Radio service is required to enable the GDL 69/69A capability.

Figure 1-8 GDL 69/69A XM Satellite Radio Data Link Receiver

1.1.9 Garmin Navigator Interface

The G600 system requires connection to at least one external Garmin WAAS GPS navigator, such as the 400W/500W series or GNS 480.

1.1.10 Attitude Heading Reference System (AHRS)

NOTE: *Aggressive maneuvering while AHRS is not operating in normal mode may degrade AHRS accuracy.*

Attitude and heading information is displayed on the PFD when the AHRS receives appropriate combinations of information from the external sensor inputs.

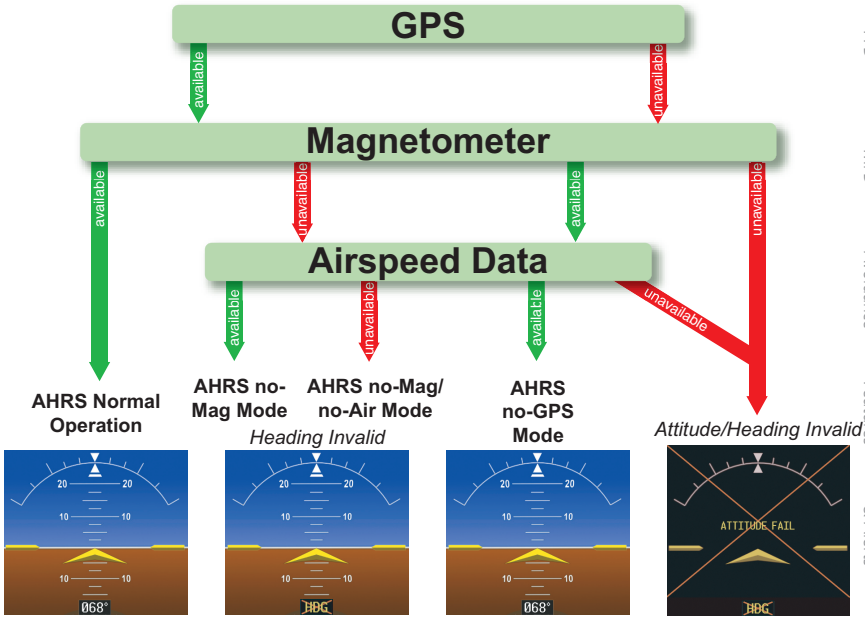

Figure 1-9 AHRS Operation

Loss of GPS, magnetometer, or air data inputs is communicated to the pilot by message advisory alerts (refer to Section 6 for specific AHRS alert information). Any failure of the internal AHRS inertial sensors results in loss of attitude and heading information (indicated by red "X" flags over the corresponding flight instruments).

A maximum of two GPS inputs are provided to the AHRS. If GPS information from one of the inputs fails, the AHRS uses the remaining GPS input and an alert message is issued to inform the pilot. If both GPS inputs fail, the AHRS will continue to provide attitude and heading information to the PFD as long as magnetometer and airspeed data are available and valid.

If the magnetometer input fails, the AHRS continues to output valid attitude information; however, the heading output on the PFD is flagged as invalid with a red "X."

***NOTE:** In this case the magnetic standby compass and GPS ground track can be used to keep the aircraft on the desired heading.*

Failure of the air data input has no effect on the AHRS output while AHRS is receiving valid GPS information. Invalid or unavailable airspeed data in addition to complete GPS failure results in loss of all attitude and heading information.

1.1.11 Secure Data Cards

The G600 System uses Secure Digital (SD) cards to load and store various types of data. For basic flight operations, SD cards are required for Terrain, Obstacle, FliteChart, and ChartView database storage as well as Jeppesen aviation and ChartView database updates. The Navigation Database update card is generally inserted in the upper SD card for database updates and then removed. Other database cards are normally located in the lower SD card.

***NOTE:** Ensure the GDU 620 is powered off before inserting or removing an SD card.*

***NOTE:** Refer to A-1 for instructions on updating the aviation database.*

Inserting an SD card

1) Insert the SD card in the SD card slot (the front of the card should be flush with the face of the display bezel).
2) To eject the card, gently press on the SD card to release the spring latch.

1.1.12 Pilot Controls

The GDU 620 controls have been designed to simplify operation of the system and minimize workload and the time required to access sophisticated functionality. Controls are located on the PFD and MFD bezels and are comprised of a PFD knob, MFD dual concentric knobs, bezel keys, and soft keys.

1.1.12.1 PFD Knob

Turning the **PFD** knob adjusts the values for the mode selected by the PFD bezel keys.

1.1.12.2 PFD Bezel Keys

Heading (HDG)

Selects Heading Select mode. Pressing the **PFD** knob in Heading mode will center the Heading Bug on the current Heading.

This is the default mode for the **PFD** knob. After 15 seconds of inactivity in another mode, the **PFD** knob will revert to Heading mode. If the Heading is invalid, the **PFD** knob will revert to Course mode.

Course (CRS)

Selects Course Select mode. Pressing the **PFD** knob in Course mode will center the needle for a VOR or OBS mode course.

Altimeter (ALT)

Selects Altitude Select mode. Pressing the **PFD** knob in Altimeter mode will enter the current altitude in the Altitude Select window.

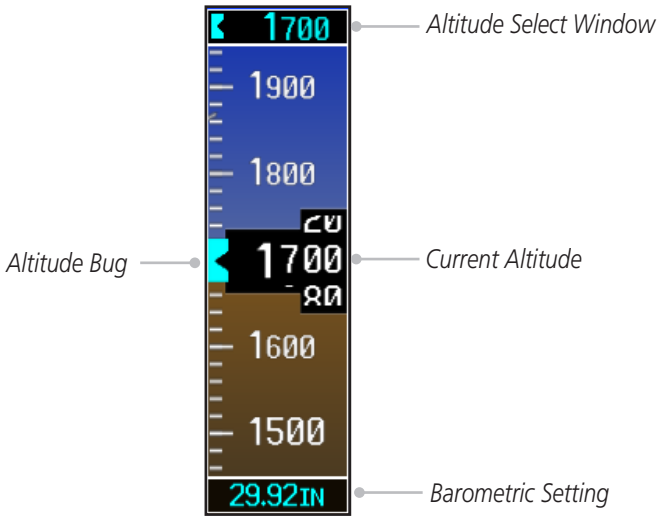

Figure 1-10 Pressing PFD Knob Sets Altitude Select to Current Altitude

Vertical Speed (V/S)

Selects Vertical Speed (V/S) mode. Pressing the **PFD** knob in V/S mode will synchronize the bug to the current vertical speed.

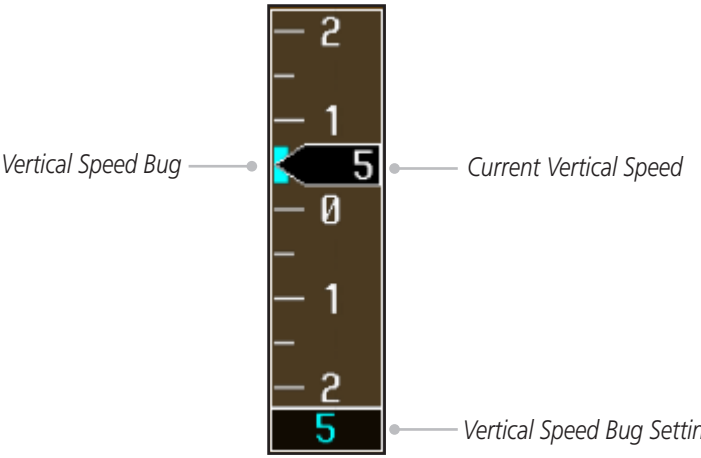

Figure 1-11 Pressing V/S Knob Sets Vertical Speed Bug to Current Vertical Speed

Barometer (BARO)

Selects Barometric Setting Select mode. Pressing the **PFD** knob in Baro mode will enter the standard pressure (29.92 in) value.

1.1.12.3 PFD Soft Keys

The soft keys are located along the bottoms of the displays below the soft key labels. The soft keys shown depend on the soft key level or page being displayed. The soft keys can be used to select the appropriate soft key function.

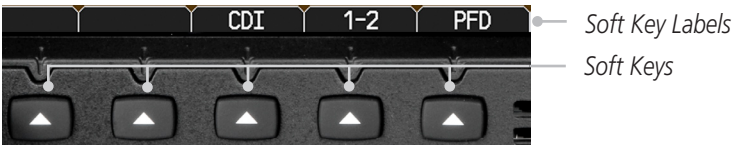

Figure 1-12 PFD Soft Key Layout

When a soft key is selected, its color changes to black text on gray background and remains this way until it is turned off, at which time it reverts to white text on black background. When a soft key function is disabled, the soft key label is subdued (dimmed). Soft keys revert to the previous level after 45 seconds of inactivity.

CDI

The **CDI** soft key toggles between selection of GPS or VOR/LOC as the active navigation source. In a single GDU 620 system, the GDU CDI soft key will change the source in the connected navigator and making a source change in the navigator will be reflected in the GDU 620. In a dual GDU 620 system, the CDI keys in the navigator will be disabled.

1-2

The **1-2** soft key toggles between the available receivers for selected navigation source (i.e. GPS1 and GPS2 or VOR/LOC1 and VOR/LOC2). This soft key will only be present if the system is configured for a second GPS or VOR/LOC.

PFD

The **PFD** soft key displays the **BRG1**, **BRG2**, and **Back** soft keys. The **BRG2** soft key will only be present if the system is configured for a second GPS or VOR/LOC receiver.

BRG1

The **BRG1** soft key cycles through the available bearing 1 indicator modes (NAV1, GPS1, ADF, or None).

BRG2

The **BRG2** soft key cycles through the available bearing 2 indicator modes (NAV2, GPS2, ADF, or None). This soft key will only be present if the system is configured for a second GPS or VOR/LOC.

Back

The **BACK** soft key returns to the pages default soft key options.

1.1.12.4 MFD Knobs

The MFD knobs are generally used for navigating and selecting information on the MFD pages. Other uses of the knobs will be detailed in the affected functions.

Small (Inner) MFD Knob

Selects a specific page within a page group. Pressing the small **MFD** knob turns the selection cursor ON and OFF. When the cursor is ON, data may be entered in the applicable window by turning the small and large **MFD** knobs.

In this case, the large **MFD** knob moves the cursor on the page and the small **MFD** knob selects individual characters or values for the highlighted cursor location.

Large (Outer) MFD Knob

Selects MFD page group. When the cursor is ON, the large **MFD** knob moves the cursor to highlight available fields.

1.1.12.5 MFD Bezel Keys

Range (RNG)

Pressing the Range arrow keys changes range on the Map pages. The Up arrow zooms out. The Down arrow zooms in. The keys also aid in scrolling up and down text pages.

Menu

Displays a context-sensitive list of options. This list allows the user to access additional features or make setting changes that relate to particular pages.

Enter (ENT)

Validates or confirms a menu selection or data entry.

Clear (CLR)

Erases information, cancels entries, or removes page menus. Pressing and holding the **CLR** key displays the Navigation Map 1 page.

1.1.12.6 MFD Soft Keys

MFD soft keys vary depending on the page selected and appear at the bottom of the MFD display. Press the soft key on the bezel below the soft key label.

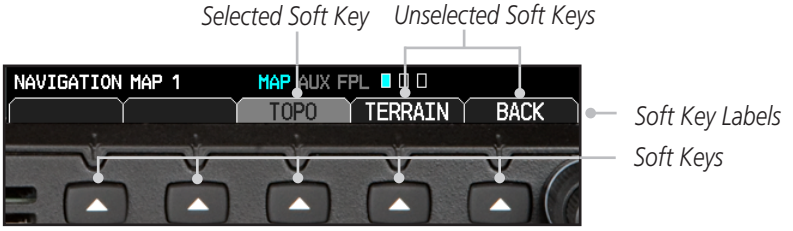

Figure 1-13 MFD Soft Key Layout

1.2 System Power Up

NOTE: *See the Aircraft Flight Manual (AFM) for specific procedures concerning avionics power application and emergency power supply operation.*

NOTE: *Refer to Section 6 for system-specific annunciations and alerts.*

The G600 System is integrated with the aircraft electrical system and receives power directly from electrical busses. The GDU 620 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.

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 GDU 620 display bezels.

On the PFD, the AHRS begins to initialize and displays "AHRS ALIGN: Keep Wings Level." The AHRS should display valid attitude and heading fields typically within the first minute after power-up. The AHRS can align itself both while taxiing and during level flight.

When the MFD powers up, the splash screen displays the following information:

- System version
- Copyright
- Land database name and version
- Obstacle database name and version
- Terrain database name and version
- Aviation database name, version, and effective dates

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.

The IGRF (International Geomagnetic Reference Field) model is contained in the GRS 77 and is only updated once every five years. The IGRF model is part of the Navigation Database. At system power-up, the IGRF models in the GRS

77 and in the Navigation Database are compared, and if the IGRF model in the GRS 77 is out of date, the user is prompted to update the IGRF model in the GRS 77. The prompt will appear after the G600 splash screen is acknowledged on the MFD.

GRS MV DB UPDATE AVAILABLE.

UPDATE FROM yyyy TO yyyy (e.g. 2005 to 2010)

Figure 1-14 System Startup Pages

Pressing the **ENT** key (or right-most soft key) acknowledges this information and displays the Navigation Map Page. When the interfaced GPS unit has acquired a sufficient number of satellites to determine a position, the aircraft's current position is shown on the Navigation Map Page.

1.3 System Operation

NOTE: Refer to Section 6 for detailed descriptions of all alerts and annunciations.

1.3.1 Using the Page Menus

The GDU 620 has a dedicated **MENU** key that when pressed displays a context-sensitive list of options for functions in the MFD. This options list allows the user to access additional features or make settings changes which specifically relate to the currently displayed window/page. There is no all-encompassing

menu. Some menus provide access to additional submenus that are used to view, edit, select, and review options. Menus display "No Options" when there are no options for the window/page selected. Soft key presses do not display menus or submenus.

1.3.1.1 Navigating a Menu

1) Press the **MENU** key to display the menu.
2) Turn the small or large **MFD** knob to scroll through a list of available options (a scroll bar always appears to the right of the window/box when the option list is longer than the window/box).
3) Press the **ENT** key to select the desired option.
4) Press the **CLR** key or **MFD** knob to remove the menu and cancel the operation.

No Options

Options for MAP Window

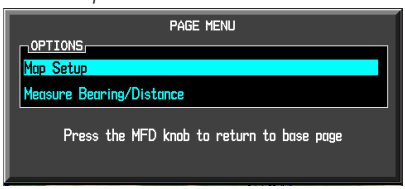

Figure 1-15 Page Menu Examples

1.3.2 Using the Soft Key Controls

The soft keys are located along the bottoms of the displays. The soft keys shown depend on the soft key level or page being displayed. The bezel keys below the soft keys can be used to select the appropriate soft key.

Figure 1-16 Soft Keys (MFD MAP Page Group)

1.3.3 System Settings

G600 system settings are managed from the Aux Mode System Setup Page. The following settings can be changed:

- Display Brightness (Mode and Level)
- Airspeed References (Glide, Vr, Vx, and Vy)
- Dual Unit Synchronization (CDI and Baro) - Dual installations only
- Date/Time (Date, Time, Time Format, and Time Offset)
- MFD Display Units (Distance/Speed and Altitude/Vertical Speed)
- System Display Units (Navigation Angle Reference, Pressure Units, and Temperature Units)

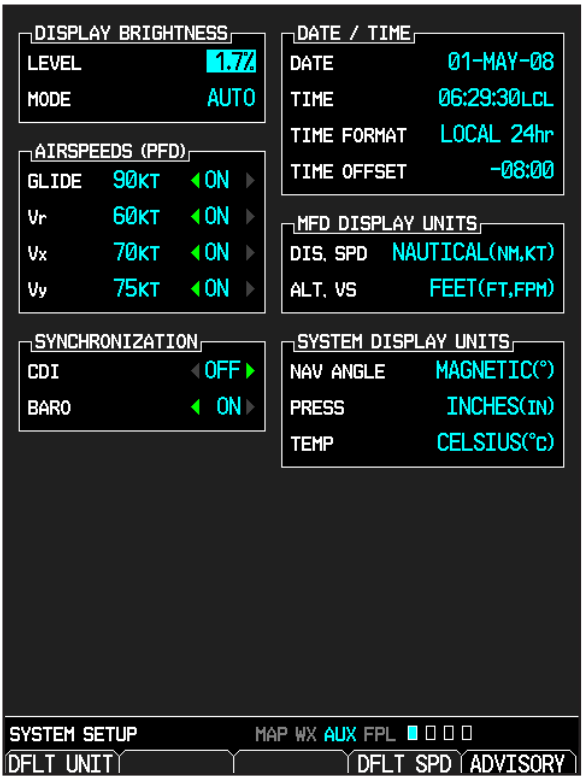

Figure 1-17 System Setup Page

1) From the first AUX page, press the small **MFD** knob and turn the large **MFD** knob to highlight the desired value.
2) Turn the small **MFD** knob to select "ON" or "OFF."
3) Press **ENTER** to save the setting.

More detail on changing settings is in the Section 3 - MFD Aux pages System Settings section.

Category	Settings	Affected Quantities	Exceptions
Display Brightness	Level Mode	Brightness levels on the PFD and MFD	
Airspeeds	Glide V_R V_X V_Y	Reference markers on PFD airspeed tape	
Synchronization	CDI - On/Off BARO - On/Off	Crossfill Nav information to GDU 620	
Date/Time	Date Time Time Format Time Offset		
Distance and Speed	Metric Nautical	Crosstrack error (HSI) Bearing distances (information windows) Distance (information window) Flight plan distances Map ranges DIS, GS, TAS, XTK fields (Navigation Status Box) All distances on MFD All speeds on MFD	Airspeed Indicator True Airspeed (PFD) Wind speed vector Map range (Traffic Page, Terrain Proximity Page) CDI scaling
Altitude and Vertical Speed	Feet Meters	All elevations on MFD	Altimeter Vertical Speed Indicator

Category	Settings	Affected Quantities	Exceptions
Navigation Angle	Magnetic (North) True (North)	Heading Course Bearing Track Desired Track	
Barometric Setting	Inches (in) Hectopascals (hpa)	Barometric pressure on PFD	
Temperature	Celsius Fahrenheit	All temperatures on PFD	

Table 1-1 Display Units Settings (System Setup Page)

More detail on changing settings is in the Section 3 - MFD Aux pages System Settings section.

1.3.4 Display Backlighting

The backlighting of the PFD and MFD displays and bezel keys can be adjusted automatically or manually. The default setting (automatic backlighting adjustment) uses photocell technology to automatically adjust for ambient lighting conditions. Photocell calibration curves are pre-configured to optimize display appearance through a broad range of cockpit lighting conditions. Manual backlighting adjustment can be accomplished using the existing instrument panel dimmer bus or the following procedures.

Backlighting Adjustment

1) From the first AUX page, press the small **MFD** knob to highlight the "Display Brightness" "Mode" box.
2) Turn the small **MFD** knob to select the desired brightness Level and then press **ENTER**.

Figure 1-18 Display Brightness Adjustment

3) Turn the large **MFD** knob to highlight the mode field. Turn the small **MFD** knob to select "AUTO" or "MANUAL."
4) Press **ENT**.

1.3.5 Dual GDU 620 Installations

Dual GDU 620 units when connected in the aircraft may be set up to communicate and share information by "Crossfilling" or synchronizing information between the two units.

1.3.5.1 Crossfill Information

The following information is always synchronized between both GDU 620's:

- Selected Altitude
- Selected Heading
- Selected Course

- Selected Vertical Speed
- Airspeed Bug Values
- Airspeed Color Band Values
- System Pressure Units
- System Temperature Units

The following information can be synchronized between GDU 620s, or changed independently, depending on the Crossfill Synchronization Settings:

- Barometric Correction (default ON)
- Selected CDI (default OFF)

When Barometric Correction is synchronized, any changes to the Barometric Setting on either GDU will change it on both GDUs.

When the CDI is synchronized, any changes to the selected CDI on either GDU will change it on both GDUs. Either pilot can change the OBS course on either GNS. If the pilot selects GPS1 on the CDI and GNS1 is in OBS mode, any course changes will move the OBS on GNS1, GDU1, and GDU2 (if the copilot has GPS1 displayed on the CDI). Similarly, if the pilot selects GPS2 on the CDI and GNS2 is in OBS mode, any course changes will move the OBS on GNS2, GDU1, and GDU2 (if the copilot has GPS2 displayed on the CDI).

AHRS 1 and ADC 1 will only be displayed on GDU 1. AHRS2 and ADC2 will only be displayed on GDU 2.

The **CDI** soft key toggles between selection of GPS or VOR/LOC as the active navigation source. In a single GDU 620 system, the GDU CDI soft key will change the source in the connected navigator and making a source change in the navigator will be reflected in the GDU 620. In a dual GDU 620 system, the CDI keys in the navigator are disabled.

1.3.5.2 Crossfill Selection

Crossfill for CDI and Baro Corrections must be selected in Aux mode in both units.

1) While viewing the first page of the AUX page group, press the small **MFD** knob and turn the large **MFD** knob to highlight "CDI" or "BARO" in the "Synchronization" box.

Figure 1-19 Dual Unit Synchronization

2) Turn the small **MFD** knob to select "ON" or "OFF."

3) Press **ENT**.

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2 PRIMARY FLIGHT DISPLAY (PFD)

The Primary Flight Display (PFD) provides aircraft information in the display on the left side of the GDU 620. Functions on the PFD are accessed by using the bezel keys to the left of the PFD and the soft keys below the PFD.

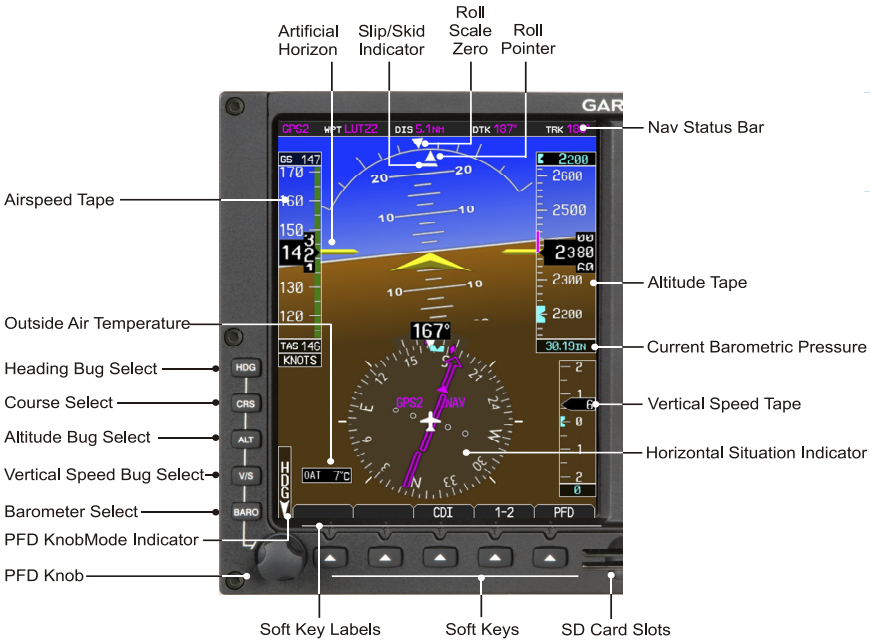


Figure 2-1 PFD Description (Ground Pointer Mode)

Figure 2-2 PFD Nav Status Bar Description

NOTE: *When navigating to a waypoint very far away the DTK, CRS, and TRK values displayed on the GDU 620 may differ from those displayed on the navigator, however the CDI is correct and is the primary means of navigation. This is because the GDU 620 applies magnetic variation corrections for the current aircraft location, but some navigators apply magnetic variation correction for the waypoint location.*

2.1 PFD Soft Key Map

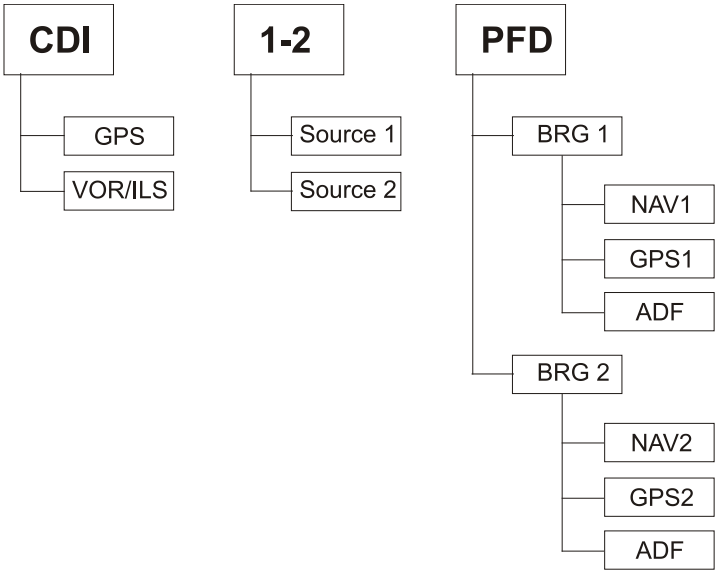


Figure 2-3 PFD Soft Key Diagram

2.2 Airspeed Indicator

The Airspeed Indicator displays airspeed on a rolling number gauge using a moving tape. The true airspeed is displayed in knots below the Airspeed Indicator. The numeric labels and major tick marks on the moving tape are marked at intervals of 10 knots, while minor tick marks on the moving tape are indicated at intervals of five knots. Speed indication starts at 20 knots.

The Airspeed Indicator provides Indicated Airspeed, True Airspeed, and Groundspeed. The Airspeed Trend Indicator shows what the airspeed will be in six seconds, if the current rate of acceleration is maintained. The actual airspeed is displayed inside the black pointer.

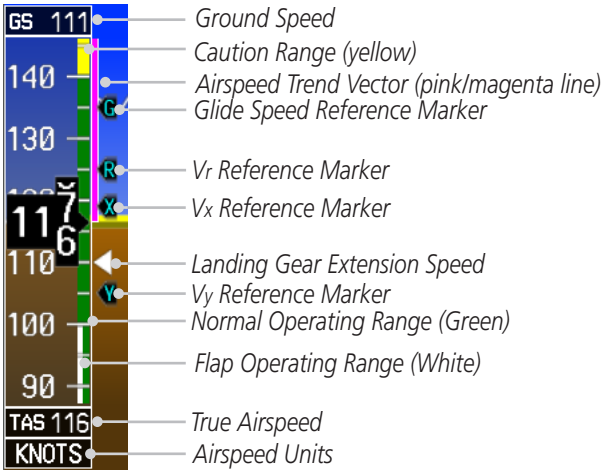


Figure 2-4 Airspeed Tape

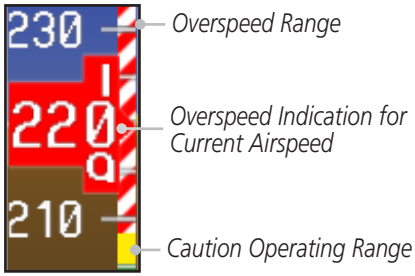


Figure 2-5 Overspeed Indication

2.2.1 Markings

A color-coded (white, green, yellow, and red/white "barber pole") speed range strip is located on the moving tape. The colors denote flaps operating range, normal operating range, caution range, and never-exceed speed (V_{NE}).

The Airspeed Trend Vector is a vertical, pink/magenta line, extending up or down on the airspeed scale, shown to the right of the color-coded speed range strip. The end of the trend vector corresponds to the predicted airspeed in 6 seconds if the current acceleration is maintained. If the trend vector crosses V_{NE}, the text of the actual airspeed readout changes to yellow. The trend vector is absent if the speed remains constant or if any data needed to calculate airspeed is not available due to a system failure.

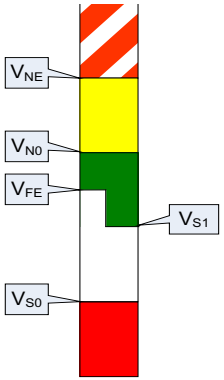


Figure 2-6 Typical Airspeed Tape Markings

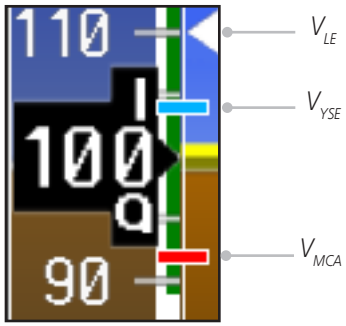


Figure 2-7 Additional Reference Markings

2.2.2 Reference Speeds

Vspeeds (Glide, V_r, V_X, and V_Y) default values are set during the installation process, but can be changed and turned on/off from the System Setup page on the first page of the Aux page group. When active (on), the Vspeeds are displayed at their respective locations to the right of the airspeed scale. The values you set are retained when the unit is repowered.

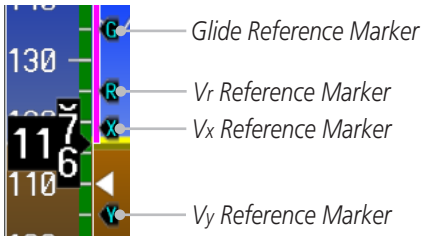


Figure 2-8 Reference Speeds

2.3 Attitude Indicator

Attitude information is displayed over a virtual blue sky and brown ground with a white horizon line. The Attitude Indicator displays pitch, roll, and slip/skid information.

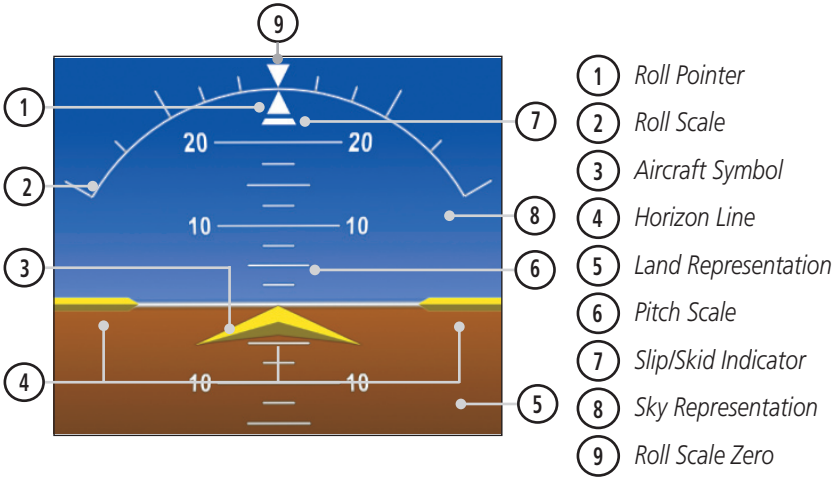


Figure 2-9 Attitude Indicator

The horizon line is part of the pitch scale. Above and below the horizon line, major pitch marks and numeric labels are shown for every 10°, up to 80°. Minor pitch marks are shown for intervening 5° increments, up to 25° below and 45° above the horizon line. Between 20° below to 20° above the horizon line, minor pitch marks occur every 2.5°.

Major tick marks at 30° and 60° and minor tick marks at 10°, 20°, and 45° are shown to the left and right of the zero. Angle of bank is indicated by the position of the pointer on the roll scale.

The Slip/Skid Indicator is the bar beneath the roll pointer. The indicator moves with the roll pointer and moves laterally away from the pointer to indicate lateral acceleration. Slip/skid is indicated by the location of the bar relative to the pointer. One bar displacement (as shown below) is equal to one ball displacement on a traditional Slip/Skid Indicator.

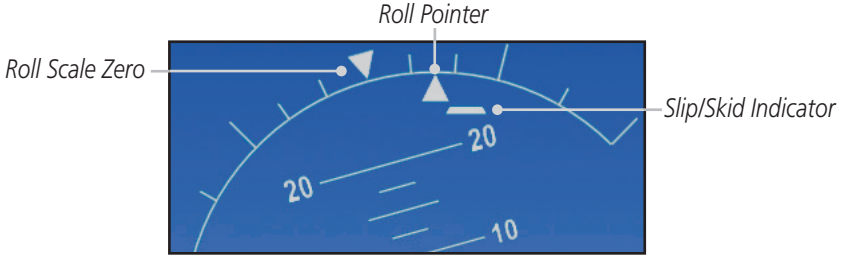


Figure 2-10 Slip/Skid Indication

The Slip/Skid Indicator / Roll Pointer combination and the Roll Scale Zero are set by the installer to reflect either a Ground Pointer or a Sky Pointer. In Ground Pointer mode, the Roll Scale and Roll Scale Zero Pointer remain stationary relative to the artificial horizon while the aircraft is banking. In Sky Pointer mode, the Roll Scale and Roll Scale Zero Pointer remain stationary relative to the sides of the PFD while the aircraft is banking.

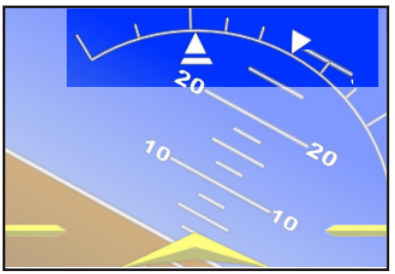


Figure 2-11 Ground Pointer

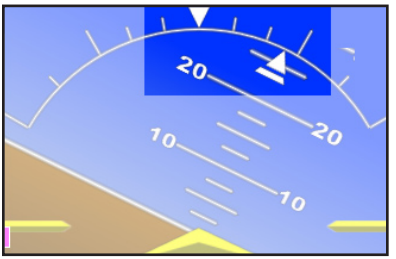


Figure 2-12 Sky Pointer

2.3.1 Extreme Attitude

Extreme attitude is defined as a roll greater than 65° left or right, 30° pitch up, or 20° pitch down. Red chevrons are displayed at greater than 50° pitch up and 30° pitch down. The PFD will "declutter" when the aircraft enters an extreme attitude. Only the primary functions will be displayed in these situations. The following information is removed from the PFD (and corresponding soft keys are disabled) when the aircraft is in an unusual attitude:

- PFD Knob Mode Annunciations
- Ground Speed, True Airspeed, and Airspeed Units
- Selected Altitude, Barometer Settings, and Selected Vertical Speed
- Vertical Course Deviation Indicator
- Traffic and Terrain Annunciations
- Flight Director Command Bars

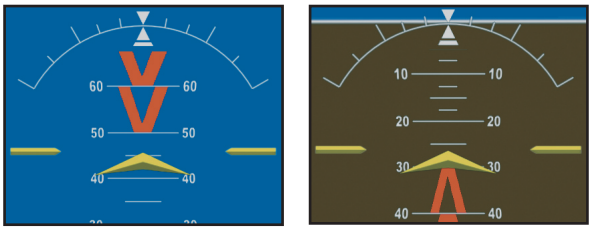


Figure 2-13 Extreme Pitch Indication

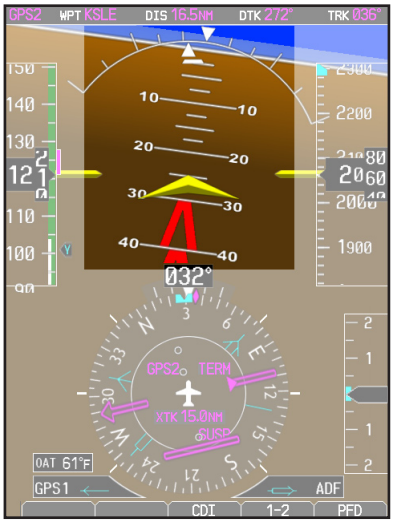


Figure 2-14 Extreme Pitch Indication Nose Down

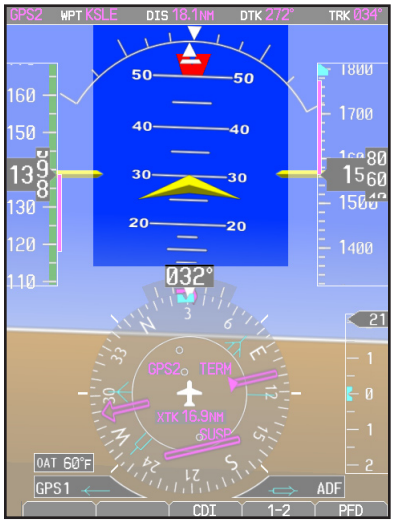


Figure 2-15 Extreme Pitch Indication Nose Up

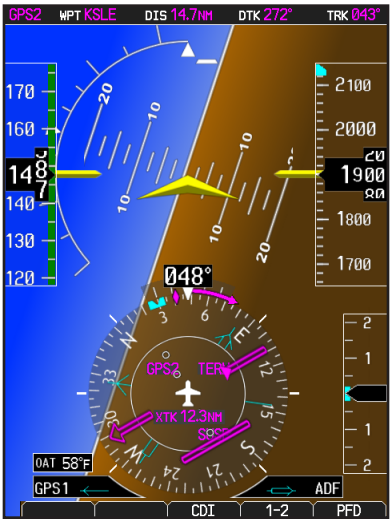


Figure 2-16 Extreme Roll Indication with Display Declutter

2.4 Altimeter

The altimeter displays the current altitude, altitude trend, altitude bug setting, altitude bug, and the current BARO setting.

The Altitude Trend Vector is a vertical, magenta line, extending up or down on the left side of the Altitude scale. The end of the trend vector corresponds to the predicted altitude in 6 seconds if the current vertical speed is maintained.

The altitude bug is displayed at the selected altitude bug setting. A portion of the altitude bug will be displayed at the top or the bottom of the altitude tape if the selected altitude bug is off of the tape.

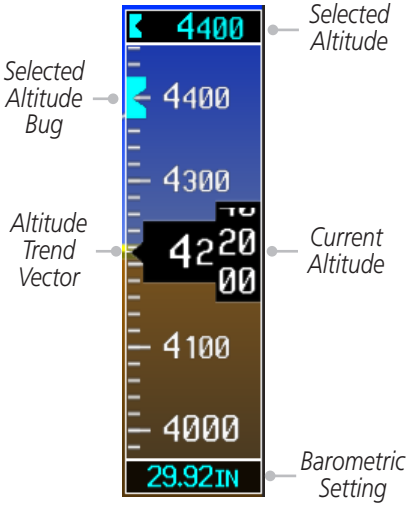


Figure 2-17 Altimeter

2.4.1 Setting the Altitude Bug/Altitude Alerting

The Altitude Alerting function provides the pilot with visual and aural alerts (if interfaced to an audio panel) when approaching the Selected Altitude. Whenever the Selected Altitude is changed, the Altitude Alerter is reset. The Altitude Alerter is independent of any autopilot installed in the aircraft. The following occur when approaching the Selected Altitude:

- Upon passing through 1000 feet of the Selected Altitude, the Selected Altitude (shown above the Altimeter) changes to black text on a light blue background, flashes for 5 seconds.
- When the aircraft passes within 200 feet of the Selected Altitude, the Selected Altitude changes to light blue text on a black background and flashes for 5 seconds and an aural tone is generated.
- After reaching the Selected Altitude, if the pilot flies outside the deviation band (beyond ±200 feet of the Selected Altitude), the Selected Altitude changes to yellow text on a black background, flashes for 5 seconds, and an aural tone is generated.

Figure 2-18 Altitude Alerting Visual Annunciations

2.4.2 Changing Barometric Setting

The Barometric Setting affects the altitude values shown on the unit. Barometric pressure units may be displayed as either inches (in) or hectopascals (hpa). See *System Display Units* in Section 3 for more detail.

1) Press the **BARO** key to activate Baro mode.
2) Turn the **PFD** knob to increase or decrease the altimeter setting.

Or

3) Press the **PFD** knob while in Baro mode to select Standard Pressure (29.92 in).

2.5 Vertical Speed (V/S) Indicator

Vertical speed data is presented on the bottom left of the PFD. A Vertical Speed bug and a bug setting are also available.

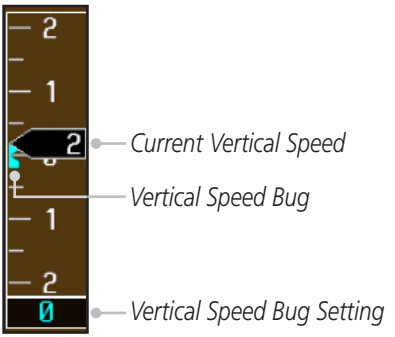


Figure 2-19 Vertical Speed (V/S) Tape

The Vertical Speed Indicator displays the aircraft vertical speed using a non-moving tape. The tape can be scaled at ±2000, ±3000, or ±4000 fpm as set by the installer. Major gradations are every 1000 fpm and minor gradations every 500 fpm. The current vertical speed is displayed in the pointer along the tape. Digits appear in the pointer when the climb or descent rate is greater than 100 fpm. If the rate of ascent/descent exceeds the vertical speed displayed on the tape, the pointer appears at the corresponding edge of the tape and the rate appears inside the pointer. The Vertical Speed Indicator range determines the airspeed tape range.

VSI (set by installer)	Airspeed Tape Range
±2000 fpm	60 kts
±3000 fpm	70 kts
±4000 fpm	80 kts

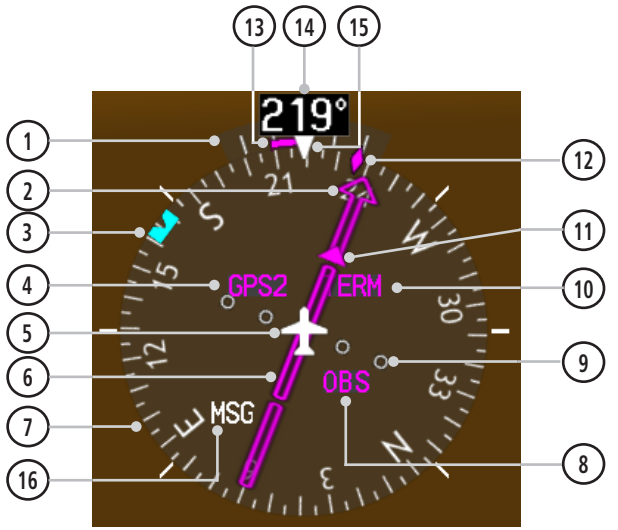
Table 2-1 Vertical Speed Settings

Setting the Vertical Speed Indicator Bug

1. Press the **V/S** key to activate Vertical Speed mode.
2. Turn the **PFD** knob to change the Vertical Speed Bug.
3. Press the center of the **PFD** knob to set the Vertical Speed value to the current vertical speed.

2.6 Horizontal Situational Indicator

The Horizontal Situation Indicator (HSI) displays a rotating compass card in a heading-up orientation. Letters indicate the cardinal points and numeric labels occur every 30°. Major tick marks are at 10° intervals and minor tick marks at 5° intervals. A digital reading of the current heading appears on top of the HSI, and the current ground track is represented on the HSI by a magenta diamond. The HSI also presents turn rate, course deviation, bearing, and navigation source information. The "MSG" annunciation will be shown in the HSI when an unacknowledged message is present on the navigator. When the message is acknowledged, the "MSG" annunciation will clear.



1. *Turn Rate Indicator*
2. *Course Pointer*
3. *Heading Bug*
4. *Navigation Source*
5. *Aircraft Symbol*
6. *Course Deviation Indicator (CDI)*
7. *Rotating Compass Card*
8. *OBS Mode Active*
9. *Lateral Deviation Scale*
10. *GPS Level of Service*
11. *To/From Indicator*
12. *Current Track Indicator*
13. *Turn Rate/Heading Trend Vector*
14. *Current Heading*
15. *Lubber Line*
16. *MSG (Message) on Navigator*

Figure 2-20 Horizontal Situation Indicator (HSI)

The 360° HSI contains a Course Deviation Indicator (CDI), with a Course Pointer, To/From Indicator, and a sliding deviation bar and scale. The course pointer is a single line arrow (GPS1, VOR1, and LOC1) or a double line arrow (GPS2, VOR2, and LOC2) which points in the direction of the set course. "LOC" will automatically be displayed if a localizer frequency is tuned. The To/From arrow rotates with the course pointer and is displayed when the active NAVAID is received.

2.6.1 Setting the Heading Bug

The Selected Heading is shown to the upper left of the HSI for 3 seconds after being adjusted. The light blue bug on the compass rose corresponds to the Selected Heading.

Figure 2-21 Heading Bug Setting

1) Press the **HDG** key to activate HDG mode.
2) Turn the **PFD** knob to change the Heading Bug.

Or

3) Press the **PFD** knob in HDG mode to set the Heading Bug to the current heading.

2.6.2 Turn Rate Indicator

The Turn Rate Indicator is located directly above the rotating compass card. Tick marks to the left and right of the lubber line denote half-standard and standard turn rates. A magenta Turn Rate Trend Vector shows the current turn rate. The end of the trend vector gives the heading predicted in 6 seconds, based on the present turn rate. A standard-rate turn is shown on the indicator by the trend vector stopping at the standard turn rate tick mark, corresponding to a predicted heading of 18° from the current heading. At rates greater than 4 deg/sec, an arrowhead appears at the end of the magenta trend vector and the prediction is no longer valid.

Figure 2-22 Turn Rate Indicator and Trend Vector

2.7 Course Deviation Indicator

The Course Deviation Indicator (CDI) moves left or right from the course pointer along a lateral deviation scale to display aircraft position relative to the course. If the course deviation data is not valid, the CDI is not displayed.

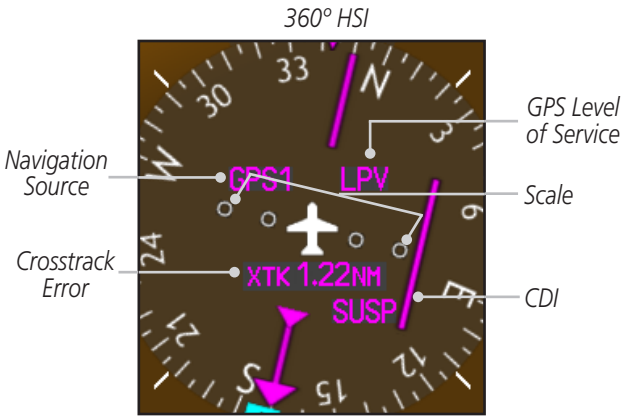


Figure 2-23 Course Deviation Indicator

NOTE: *The ILS Localizer and Glideslope deviation indicators will indicate full scale deflection for the GNS 480 navigator at the second dot. The GNS 400W/500W series navigators will indicate full scale deflection at the edge of the display.*

2.7.1 Changing CDI Sources

The CDI can display two sources of navigation: GPS or NAV (VOR, and LOC). Color indicates the current navigation source: magenta (for GPS) or green (for VOR and LOC). The full scale limits for the CDI are defined by a GPS-derived distance when coupled to GPS. When coupled to a VOR or localizer (LOC), the CDI has the same angular limits as a mechanical CDI. If the CDI exceeds the maximum deviation on the scale (two dots) while coupled to GPS, the crosstrack error (XTK) is displayed below the white aircraft symbol.

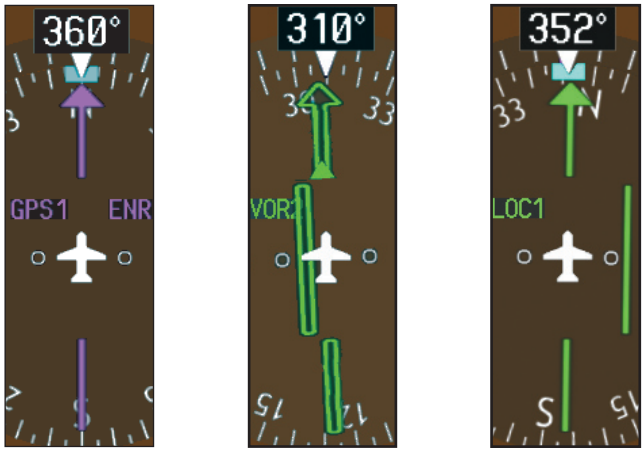


Figure 2-24 Navigation Sources

1) Press the **CDI** soft key to toggle between GPS and VOR/LOC source type.
2) Press **1-2** key to toggle the 1 and 2 navigators of the GPS or VOR/LOC sources.
3) Verify the navigation source by the indication on the HSI and in the upper left corner of the PFD.

NOTE: *The selected navigator is the active navigator for all PFD and MFD operations, except for the supplemental bearing pointers.*

2.7.2 Changing CDI Course

The Selected Course is shown to the upper right of the HSI for 3 seconds after being adjusted.

Figure 2-25 Course Setting

1) Press the **CRS** key to activate Course mode.
2) Turn the **PFD** knob to change the Course values.

Or

3) Press the **PFD** knob to set a Course that will center the CDI to the VOR station or waypoint if in GPS OBS mode.

2.7.3 Vertical Deviation Indicator (VDI)

The Vertical Deviation (Glideslope) Indicator (VDI) appears to the left of the VSI whenever an ILS frequency is tuned in the active NAV field. A green diamond acts as the VDI Indicator, like a glideslope needle on a conventional indicator. If a localizer frequency is tuned and there is no glideslope signal, "NO GS" is annunciated. The glideslope on an ILS approach is only shown if the current heading is within 90° of the selected course. This prevents the glideslope from being displayed during localizer backcourse approaches.

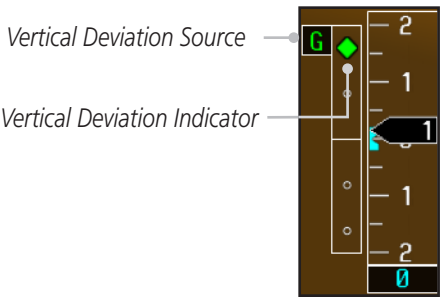


Figure 2-26 Vertical Deviation Indicator (ILS Source)

The vertical deviation is similar to the glideslope for GPS approaches supporting WAAS vertical guidance (LNAV+V, L/VNAV, LPV) and is generated by the system to reduce pilot workload during approach. When an approach of this type is loaded into the flight plan and GPS is the selected navigation source, the Vertical Deviation Indicator appears as a magenta diamond. If the approach

type downgrades to LNAV past the final approach fix (FAF), or the approach only supports LNAV service, "NO GP" is annunciated.

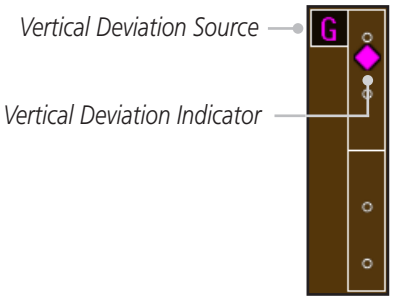


Figure 2-27 Vertical Deviation Indicator (GPS Source)

2.7.4 Auto-Slewing

The G600 system is designed to interface with GNS navigator units and also manage up to four different CDI course pointers (GPS1, NAV1, GPS2, NAV2) independently. The G600 will automatically slew the NAV course pointer to the correct final approach course when a ILS, LOC, LOC BC, LDA or SDF approach is active in the GNS navigator and the appropriate frequency is in the active window in the navigator. The G600 will Auto-Slew the HSI course pointer for an ILS, LOC, LOC BC, LDA or SDF approach when the steps below are completed in the following order:

1) The desired approach is selected and activated in the navigator (this can be verified by the approach waypoints appearing on the GDU620 MFD Nav Map Page or FPL Page).
2) The appropriate frequency is in the active window in the navigator.
3) The CDI selection on the GDU 620 is changed to NAV course pointer for the active navigator.

NOTE: *If the NAV course pointer is displayed for the active navigator when the approach is activated and the localizer frequency is placed in the active window, the pilot will need to switch to another CDI source and then back to NAV for the course pointer to Auto-Slew.*

For example, if NAV1 is currently selected, the pilot must:
press the CDI soft key twice: NAV1>GPS1>NAV1
or
press the 1-2 soft key twice: NAV1>NAV2>NAV1

NOTE: *For LOC BC approaches, the course pointer will slew 180 degrees from the inbound course.*

Example of activating Auto-Slewing in the G600:

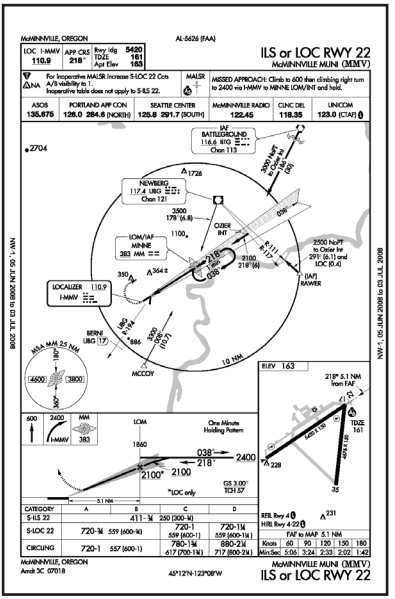


Figure 2-28 Auto-Slewing HSI with ILS Loaded and Shown with the Corresonding Approach Plate

1) The aircraft is flying vectors to final on an active ILS approach, with the appropriate approach in the GNS navigator.
2) The appropriate ILS frequency must be activate in the navigator.
3) Verify that the waypoints for the approach are displayed on the Nav Map Page or the FPL Page of the MFD.
4) Upon approaching the final course, select NAV on the HSI.

NOTE: *If auto CDI switching is active on the GNS unit, the GNS will force the GNS/GDU 620 to NAV when the aircraft is close to the LOC course.*

5) The CDI and course pointer will change from magenta to green and the pointer will move, or slew, to the final approach course (or 180° from the final approach course for LOC BC approaches).

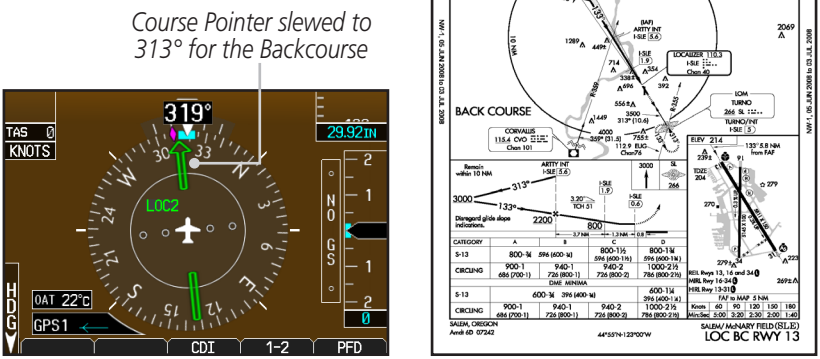


Figure 2-29 Auto-Slewing HSI with Localizer Backcourse Loaded and Shown with the Corresponding Approach Plate

2.8 Supplemental Flight Data

2.8.1 Bearing Pointers

Two bearing pointers can be displayed on the HSI for NAV and GPS sources. The pointers are light blue and are single- (BRG1) or double-lined (BRG2); an icon is shown in the respective information window to indicate the pointer type. The system must be configured for a second navigation source to show the BRG2 selection.

When a bearing pointer is displayed, its associated information window is also displayed.

The Bearing Information windows are displayed to the lower sides of the HSI and show:

- Bearing source (NAV, GPS)
- Pointer icon (BRG1 = single line, BRG2 = double line)

The bearing pointer is removed from the HSI if:

- The NAV radio is not receiving the tuned VOR station
- The NAV radio is tuned to a Localizer frequency

- GPS is the bearing source and an active waypoint is not selected
- ADF is selected and a signal is not received (if you have an ADF that supports a valid flag then the bearing pointer will be removed. If your ADF system does not include a valid flag then the bearing pointer will still be displayed, regardless of ADF signal validity.)

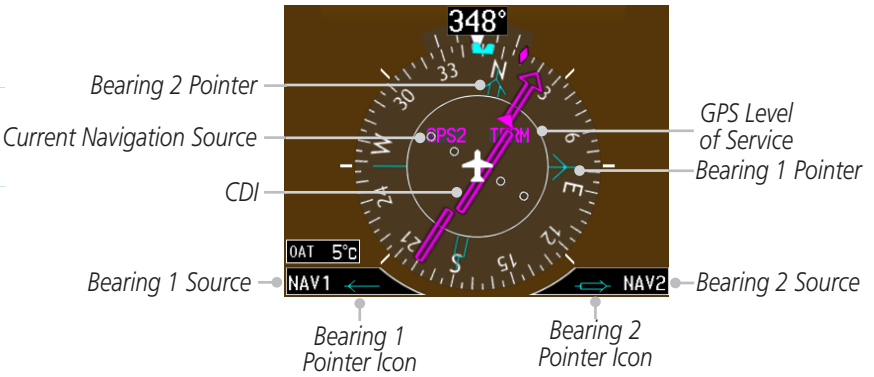


Figure 2-30 HSI with Bearing Information

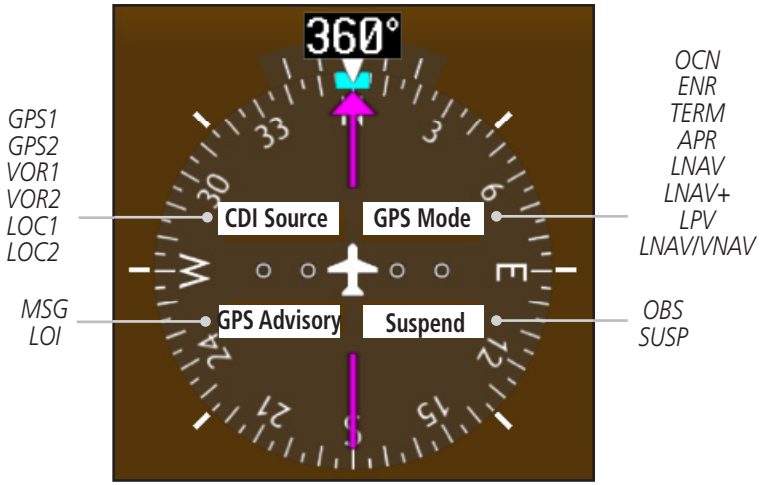


Figure 2-31 PFD HSI Annunciations

1) Press the **PFD** soft key to display the navigation source keys.
2) Press the **BRG 1** or **BRG 2** soft keys to toggle between the available Nav receivers of the selected source (such as: GPS, VLOC, or ADF).

***NOTE**: The Bearing Line for navigation source 1 (BRG1) will be a single line. The Bearing Line for navigation source 2 (BRG2) will be a double line.*

2.8.2 Temperature Display

The Outside Air Temperature (OAT) is displayed in the lower left of the PFD. The OAT can be displayed in °F or °C, which is configured in the Aux System Setup Page. The temperature is derived from the GTP 59 Temperature Probe on the aircraft. The displayed temperature is the Static Air Temperature reported by the Air Data Computer. This temperature value is corrected for ram air heating effects.

Figure 2-32 HSI Outside Air Temperature

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3 MULTI-FUNCTION DISPLAY (MFD)

The MFD displays a full-color moving map with navigation information. Moving map information is shown on the two Navigation Map pages and the optional three Weather (WX) pages (requires GDL 69/69A and XM weather subscription). The Navigation Map displays aviation data (e.g., airports, VORs, airways, airspaces), geographic data (e.g., cities, lake, highways, borders), topographic data (map shading indicating elevation), and hazard data (e.g., traffic, terrain, weather). The map options set for Navigation Map page 1 are used as the default settings for the optional Weather (WX) pages. The amount of displayed data can be reduced by selecting the **DCLTR** soft key. The Navigation Map can be oriented four different ways: North Up (NORTH UP), Track Up (TRACK UP), Desired Track Up (DTK UP), or Heading Up (HDG UP).

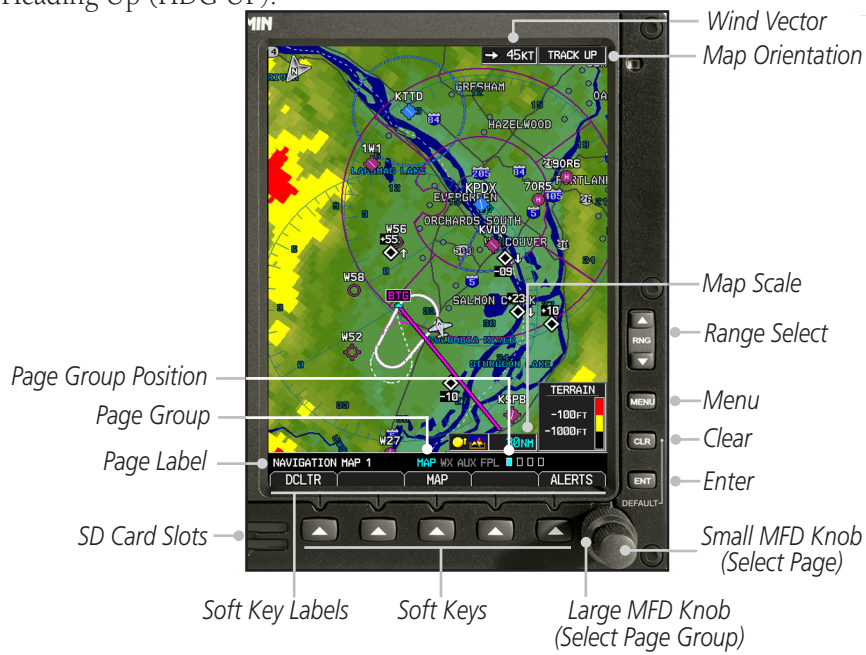


Figure 3-1 MFD Description

The nose of the aircraft icon is placed on the Navigation Map at the location corresponding to the calculated present position. The aircraft position and the flight plan legs are based on information received from the currently selected GPS navigator. The leg of the active flight plan currently being flown is shown as a magenta line on the navigation map. The other legs are shown in white.

There are 28 different map ranges available, from 500 feet to 2000 NM. The current range is indicated in the lower right corner of the map and represents the top-to-bottom distance covered by the map. To change the map range on any map, press the **RNG** keys on the right side of the bezel.

3.1 Functional Display Map

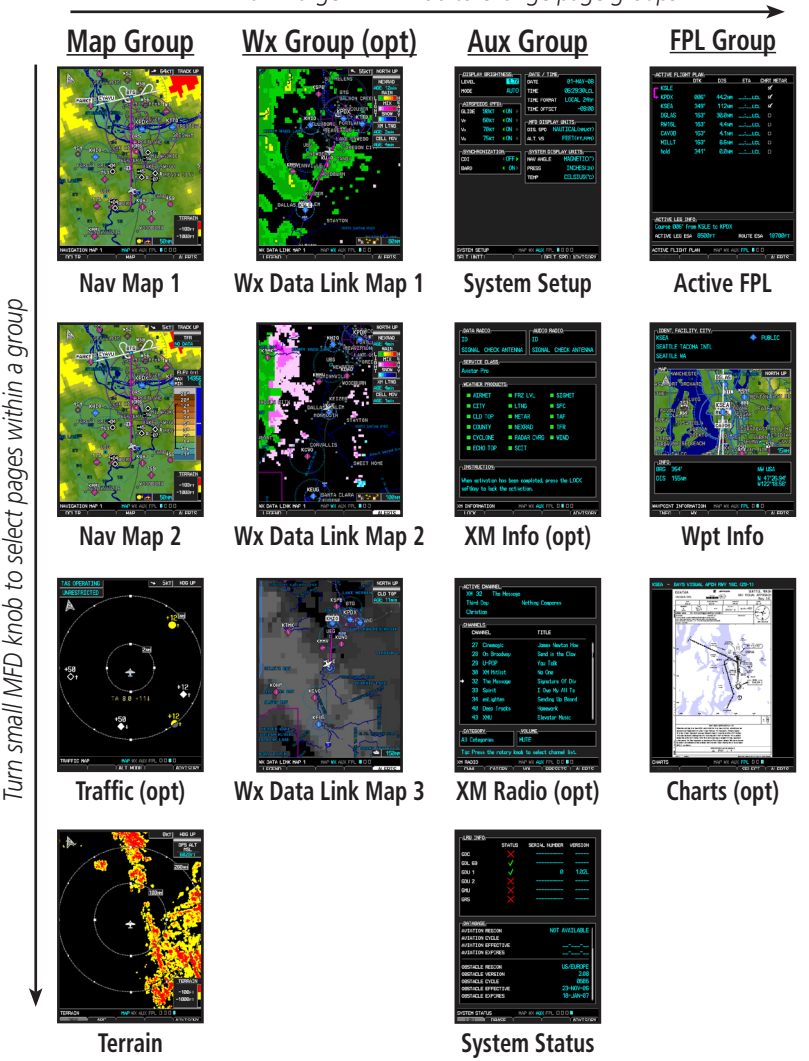


Figure 3-2 MFD Page Groups

3.2 MFD Soft Key Map

The soft keys available depend on the page displayed and the features available. The soft key "Alerts" is present on the far right position in all MFD displays.

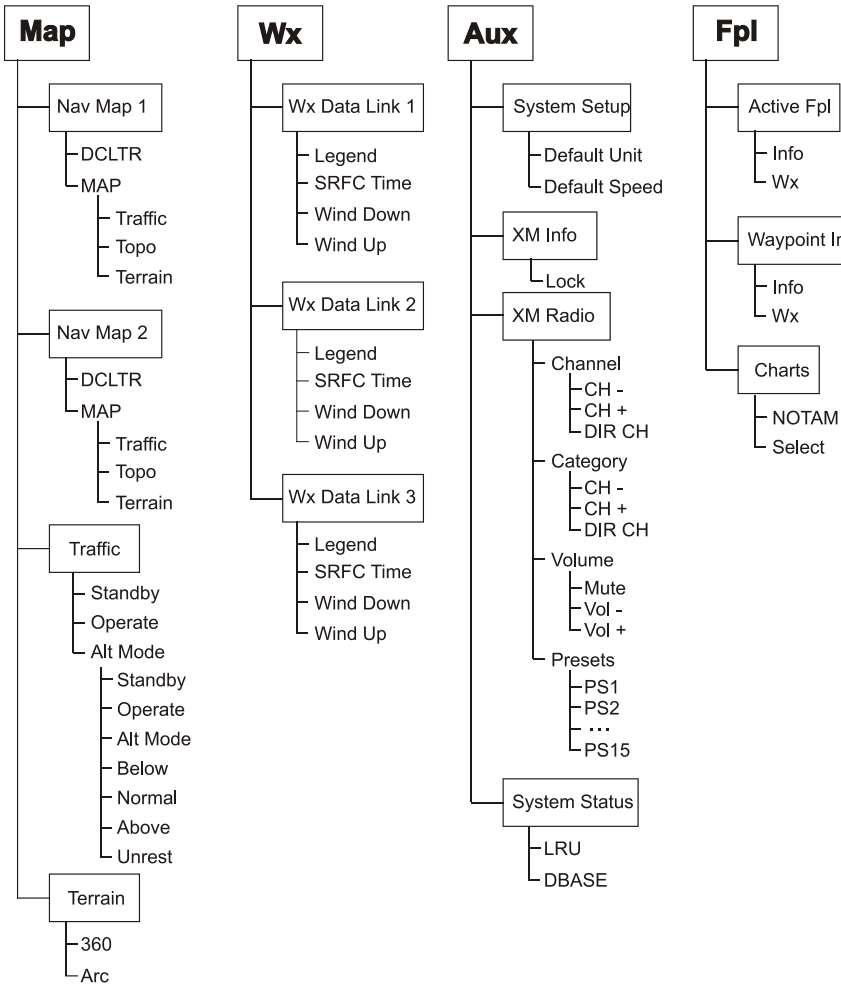


Figure 3-3 MFD Soft Keys

3.3 Navigation Map Pages

Map displays are used extensively in the GDU 620 to provide situational awareness in flight. The two Navigation map pages can display the following information:

- Airports, NAVAIDs, airspace, airways, land data (highways, cities, lakes, rivers, borders, etc.) with names
- Map Pointer information (distance and bearing to pointer, location of pointer, name, and other pertinent information)
- Map range
- Wind direction and speed
- Map orientation
- Icons for enabled map features
- Aircraft icon (representing present position)
- Nav range ring
- Flight plan legs
- Track vector
- Topography scale
- Topography data
- XM NEXRAD Weather
- XM Lightning
- XM Storm Cells

Symbols used on the MFD are detailed in Section 7.

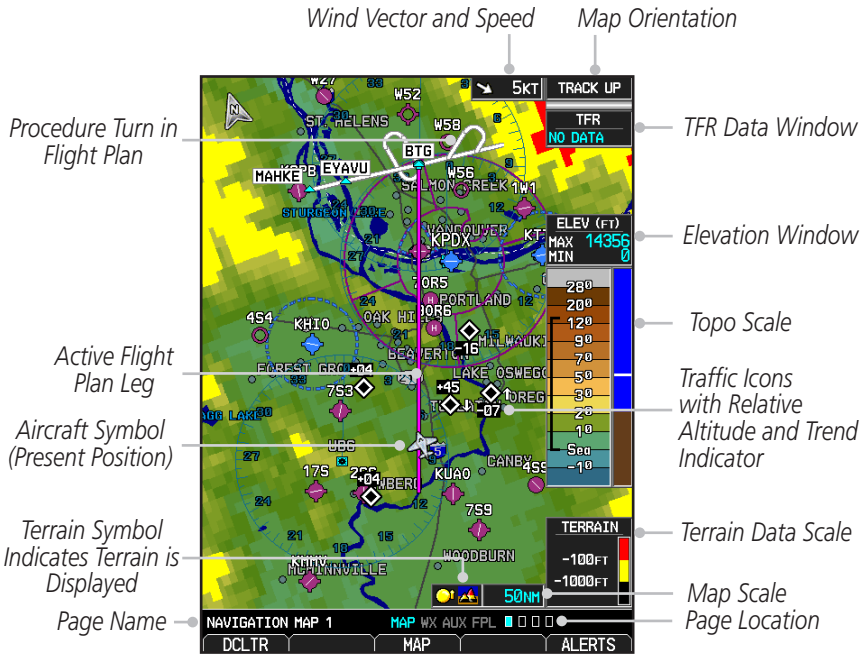


Figure 3-4 MFD Map Description

3.3.1 Default Navigation Page

While on any page of the MFD, you may easily return to the first Navigation Map page of the Map group by pressing and holding the **CLR** key to return to the first page of the Map group.

3.3.2 Editing Information

1) Press the small **MFD** knob to activate editing.
2) Turn the large **MFD** knob to select desired item.
3) Turn the small **MFD** knob to change the highlighted value.
4) Press **ENT** to accept the displayed value.
5) Press the small **MFD** knob to cancel selection or to end editing.

NOTE: *Page Group and Page are shown at the bottom of the MFD.*

Figure 3-5 Page Group and Page Locator

3.3.3 Selecting Page Options

1) Change the fields or the setup of a page by pressing the **MENU** key and make the necessary adjustments with the **MFD** knobs.
2) Press **ENT** to accept the displayed value. Press the small **MFD** knob to cancel selection or to end editing.

3.3.4 Changing the Navigation Map Range

The Range (RNG) keys on the right side of the bezel are used to change the map display range. Pressing the **RNG** key will zoom out (increasing the displayed map range) and pressing the **RNG** key will zoom in (decreasing the displayed map range). The Map Range is shown in the lower right corner of the MFD and represents the top-to-bottom distance covered by the map. The map ranges available are from 500 feet to 2000 NM. When the map range is decreased to a point that exceeds the capability of the GDU 620 to accurately represent the map, a magnifying glass icon is shown to the left of the map range.

Figure 3-6 Map Range

3.3.5 Decluttering Map Pages

The Map Declutter feature allows the pilot to progressively step through four levels of decluttering to remove map information. The declutter level is displayed in the **DCLTR** soft key.

Figure 3-7 Map Declutter Soft Key

1) There are four levels of decluttering. DCLTR (0) shows the most detail. DCLTR-3 removes the most detail.
2) While viewing Navigation Map 1 or 2, press the **DCLTR** soft key. Each successive press of the **DCLTR** soft key will toggle through the declutter levels. Features marked with a • are shown at the indicated Declutter Level.

Feature	0	1	2	3	Feature	0	1	2	3
Airways	•				Class D Airspace	•	•		
River/Lake Names	•				Tower	•	•		
Land/Country Text	•				TRSA	•	•		
Large City	•				ADIZ	•	•		
Medium City	•				Alert Areas	•	•		
Small City	•				Caution Areas	•	•		
Small Town	•				Danger Areas	•	•		
Freeways	•				Warning Areas	•	•		
Highways	•				Large Airports	•	•	•	
Roads	•				Medium Airports	•	•	•	
Railroads	•				Prohibited Areas	•	•	•	
Political Boundaries	•				MOAs	•	•	•	
User Waypoints	•	•			Runway Labels	•	•	•	
Lat/Lon Grids	•	•			Lightning Strike Data	•	•	•	
VORs	•	•			NEXRAD Data	•	•	•	
NDBs	•	•			Traffic Symbols	•	•	•	
Intersections	•	•			Traffic Labels	•	•	•	
Class B Airspace	•	•			Water Detail	•	•	•	•
Class C Airspace	•	•			Active FPL Legs	•	•	•	•

Table 3-1 Features Shown at Each Decluttering Level

3.3.6 Panning

The Panning Map Page function allows you to move the map beyond its current limits without adjusting the map scale and to examine information at the pointer location. When you select the panning function — by pressing the small **MFD** knob — a target pointer flashes on the map display. A window also appears at the top of the map display showing the latitude/longitude position of the pointer, the ETE from your present position to the pointer, elevation at the pointer, and bearing and distance to the pointer from your present position.

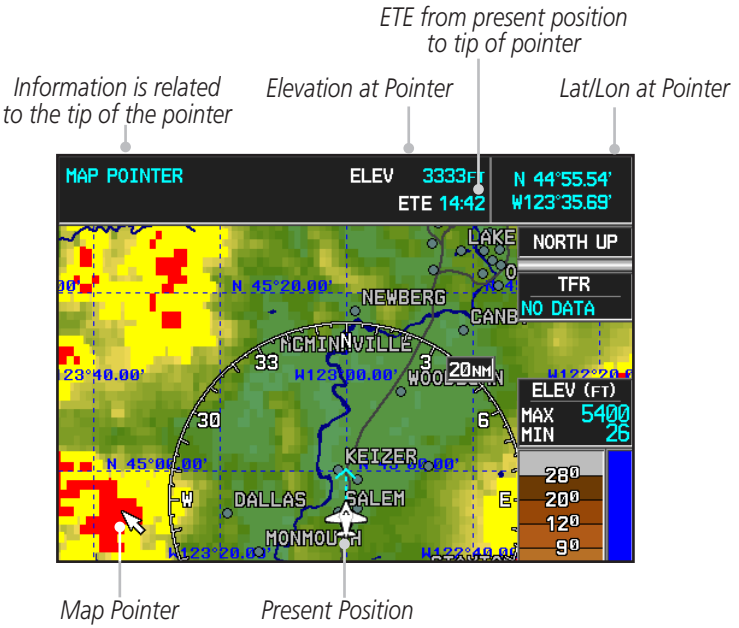


Figure 3-8 Navigation Map Pointer Location Information

1) While viewing a Map or Chart page, press the small **MFD** knob. A flashing pointer will appear in the center of the map page. The measured information is referenced to the tip of the arrow.

Figure 3-9 Navigation Map Initial Pointer Location

2) Turn the large **MFD** knob to move the cursor horizontally. Turn the small **MFD** knob to move the cursor vertically.

3) Press the small **MFD** knob again to cancel panning. The map view will return to the normal view with your present position centered on the map.

3.3.7 Selecting Items on the Map

When the target pointer is placed on an object, the name of that object is highlighted (even if the name wasn't originally displayed on the map). This feature applies to airports, NAVAIDs, user-created waypoints, roads, lakes, rivers — just about everything displayed on the map except route lines. When an airport, NAVAID, or user waypoint is selected on the map display, you can review information about the item.

1) While viewing the Navigation Map pages of the Map page group, press the small **MFD** knob to activate panning.
2) Move the cursor with the small and large **MFD** knobs to highlight a feature.
2) Press **ENT** to display information about the highlighted feature.
3) Press the **INFO** soft key (if available) to view more information about the highlighted feature.
4) Press the **WX** soft key (if available) to view TAF and METAR information.
5) Press the small **MFD** knob again to return to panning.

3.3.8 Measuring Distances

The "Measure Bearing/Distance" function provides a quick and easy method to determine the bearing and distance between any two points on the Navigation Map.

1) While viewing Navigation Map 1 or 2 of the Map page group, press **MENU.**
2) Turn the large or small **MFD** knobs to highlight "Measure Bearing/Distance "and then press **ENT**.

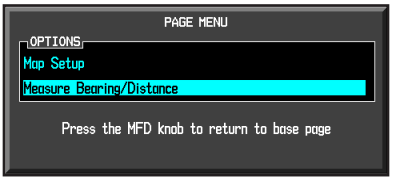


Figure 3-10 Navigation Map Measure Distance Function

3) Your present position will be marked as the starting reference point. To choose a different starting reference point, turn the large or small **MFD** knobs to desired point and press **ENT**.

Figure 3-11 Measure Distance Starting Reference Point

4) Turn the large or small **MFD** knobs to move the cursor to a reference point. The distance and bearing is displayed at the top of the display.

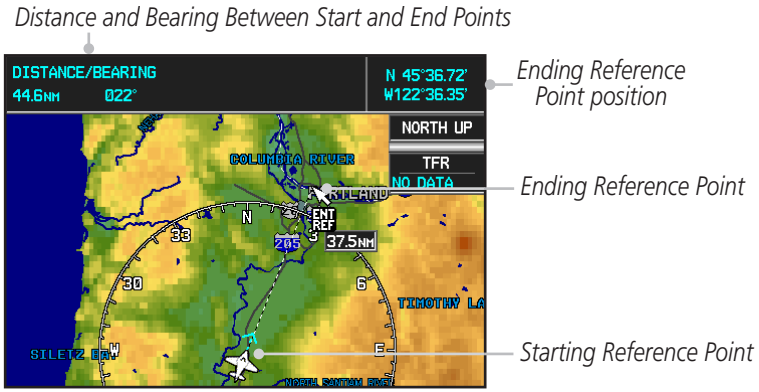


Figure 3-12 Bearing/Distance Measurement

5) Press the small **MFD** knob to stop measuring.

3.3.2 Customizing Navigation Map Pages

The Navigation Map pages are customized by selecting options from the Page Menu. The Page Menu options include choices for Map Setup and Measure Bearing/Distance. The Map Setup choice covers selections for Map, Weather, Traffic, and Aviation depending on the installed equipment of a given aircraft. The Measure Bearing/Distance selection allows you to determine the Bearing, Distance, and Lat/Lon position for points selected on the Navigation Map page.

3.3.3 Map Setup

The Map Setup selection from the Page Menu allows you to customize the displayed items.

1) While viewing the Navigation Map 1 or 2 pages of the Map page group, press the **MENU** key to display the Navigation Map Page Menu.

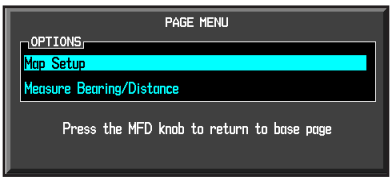


Figure 3-13 Navigation Map Page Menu

2) With the cursor flashing on the "Map Setup" option. Press the **ENT** key to display Map Setup Menu.

3) Use the large and small **MFD** knobs to select the Group and press **ENT** to allow editing of the selected group. The groups shown depend on the features available for equipment installed in your aircraft.

Figure 3-14 Navigation Map Page Menu Map Group Selection

4) Press the small **MFD** knob to return to the Navigation Map Page.

Map Group		Weather Group (optional)		Traffic Group (optional)		Aviation Group	
Menu Item	**Adjustment**	**Menu Item**	**Adjustment**	**Menu Item**	**Adjustment**	**Menu Item**	**Adjustment**
Orientation	Direction	NEXRD Viewing Range	Off/Range	Traffic	Off/Modes	Safe Taxi Viewing Range	Off/Range
North Up At	Off/Range	NEXRD Cell Mov	Off/Range			Rwy Extension Range	Off/Range
Auto Zoom	On/Off	XM Ltng	Off/Range			INT/NDB Viewing Range *	Off/Range
Land Data	On/Off					VOR Viewing Range*	Off/Range
Track Vector Length	Off/Time					Class B/ TMA *	Off/Range
Wind Vector	On/Off					Class C/ TCA *	Off/Range
Nav Range Ring	On/Off					Class D *	Off/Range
Topo Data	On/Off					Restricted*	Off/Range
Topo Scale	On/Off					MOA (Military)*	Off/Range
Terrain Data	On/Off					Other/ ADIZ *	Off/Range
Obstacle Viewing Range	Off/Range					TFR *	Off/Range
Lat/Lon Viewing Range	Off/Range					Airways	Off/Modes

* - shown if the Aviation database is current.

Table 3-2 Navigation Map Page Menu Selections

3.3.3.1 Map Feature Options

Choose the options to determine the values for display on each Navigation Map. The options you save will be retained until changed.

Map Orientation

The Orientation option sets the orientation of the Navigation Map.

1) While viewing the Navigation Map 1 or 2 of the Map page group, press the **MENU** key. With "Map Setup" highlighted, press **ENT**. With the Map Group active, turn the large **MFD** knob to highlight the "Orientation" option.

2) Turn the small **MFD** knob to change the highlighted value.

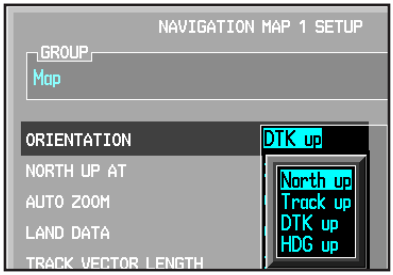


Figure 3-15 Navigation Map Orientation

3) Press **ENT** to accept the displayed value. The next option will be highlighted.

4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

North Up At

The North Up At option allows you to select the map range where the Map Orientation will automatically change to North Up.

1) While viewing the Navigation Map 1 or 2 of the Map page group, press the **MENU** key. With "Map Setup" highlighted, press **ENT**. With the Map Group active, turn the large **MFD** knob to highlight the "North Up At" option.

2) Turn the small **MFD** knob to change the highlighted value.

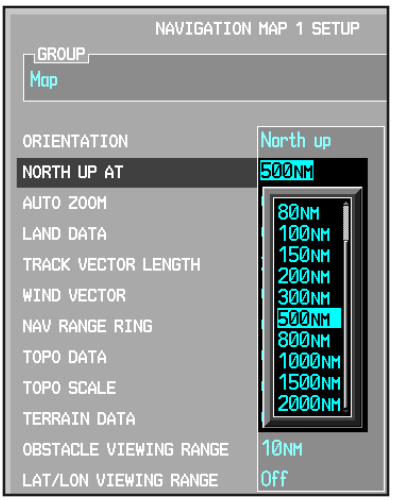


Figure 3-16 Navigation Map "North Up At" Orientation Range Selection

3) Press **ENT** to accept the displayed value. The next option will be highlighted.

4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

Auto Zoom

With a valid flight plan, the Auto Zoom feature will automatically change the Navigation Map range depending on the distance to the next waypoint in the flight plan. If enabled, it will also automatically zoom to the SafeTaxi zoom range when the aircraft transitions from "in air" to "on ground." Auto Zoom can be overridden at any time by manually zooming with the **RNG** keys or enabling OBS mode. Auto Zoom is re-enabled once one of the following conditions is met:

1) a waypoint is sequenced,
2) the aircraft transitions from "on ground" to "in air,"
3) a point is reached where the Auto Zoom range matches the manual override range (known as auto-sync),
4) Auto Zoom is toggled of and back on in the Navigation Map Setup page,

Or

5) OBS mode is turned off.

1) While viewing the Navigation Map 1 or 2 of the Map page group, press the **MENU** key. With "Map Setup" highlighted, press **ENT**. With the Map Group active, turn the large **MFD** knob to highlight the "Auto Zoom" option.
2) Turn the small **MFD** knob to select On or Off.

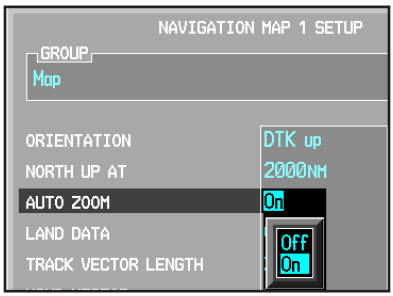


Figure 3-17 Navigation Map Auto Zoom

3) Press **ENT** to accept the displayed value. The next option will be highlighted.
4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

Land Data

The Land Data option selects whether detailed land features, such as rivers, roads, cities, are displayed. Topo features, traffic, terrain, and obstacles will still be displayed, even with Land Data turned off.

1) While viewing the Navigation Map 1 or 2 of the Map page group, press the **MENU** key. With "Map Setup" highlighted, press **ENT**. With the Map Group active, turn the large **MFD** knob to highlight the "Land Data" option.

2) Turn the small **MFD** knob to select On or Off.

Figure 3-18 Navigation Map Land Data

3) Press **ENT** to accept the displayed value. The next option will be highlighted.

4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

Track Vector Length

When turned on, the Track Vector Length option will show a dashed line and arrow extending from the aircraft icon illustrating the current Track and the distance the aircraft will travel in the selected time.

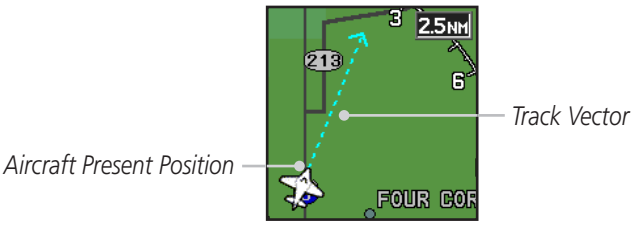


Figure 3-19 Navigation Map Track Vector

1) While viewing the Navigation Map 1 or 2 of the Map page group, press the **MENU** key. With "Map Setup" highlighted, press **ENT**. With the Map Group active, turn the large **MFD** knob to highlight the "Track Vector Length" option.

2) Turn the small **MFD** knob to select the Track Vector Length time value or Off.

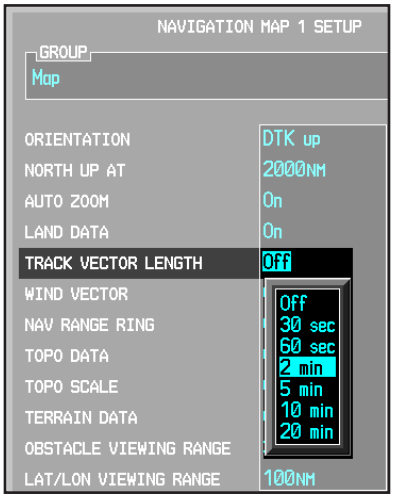


Figure 3-20 Navigation Map Track Vector Length Selection

3) Press **ENT** to accept the highlighted value. The next option will be highlighted.

4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

Wind Vector

The Wind Vector option when turned on will show a box in the top right corner of the MFD showing the wind direction and speed.

Figure 3-21 Navigation Map Wind Vector Display

1) While viewing the Navigation Map 1 or 2 of the Map page group, press the **MENU** key. With "Map Setup" highlighted, press **ENT**. With the Map Group active, turn the large **MFD** knob to highlight the "Wind Vector" option.

2) Turn the small **MFD** knob to select the On or Off.

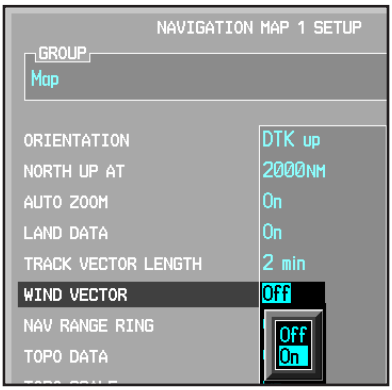


Figure 3-22 Navigation Map Wind Vector Selection

3) Press **ENT** to accept the displayed value. The next option will be highlighted.

4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

Nav Range Ring

When turned on, the Nav Range Ring option will show a ring with a compass rose around your present position on the Navigation Map. The relative size shown on the map will remain the same (25% of the map range).

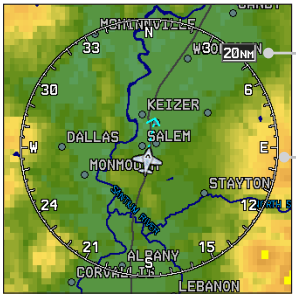


Figure 3-23 Navigation Map Range Ring

1) While viewing the Navigation Map 1 or 2 of the Map page group, press the **MENU** key. With "Map Setup" highlighted, press **ENT**. With the Map Group active, turn the large **MFD** knob to highlight the "Nav Range Ring" option.

2) Turn the small **MFD** knob to select On or Off.

Figure 3-24 Navigation Map Range Ring Selection

3) Press **ENT** to accept the displayed value. The next option will be highlighted.

4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

Topo Data

The Topo Data option selects whether the colored topographical features is displayed. Traffic, Land Data, Terrain, and Obstacles will still be displayed even with Topo Data turned off. Topo data and NEXRAD may not be displayed at the same time. Turning on either Topo data or NEXRAD will automatically turn off the other one. Turning off either Topo data or NEXRAD will not automatically turn the other one back on.

Topo Data Off *Topo Data On*

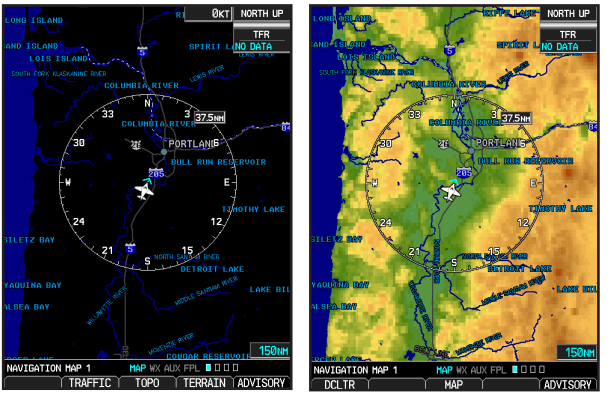


Figure 3-25 Navigation Map Topo Data

1) While viewing the Navigation Map 1 or 2 of the Map page group, press the **MENU** key. With "Map Setup" highlighted, press **ENT**. With the Map Group active, turn the large **MFD** knob to highlight the "Topo Data" option.

2) Turn the small **MFD** knob to select On or Off.

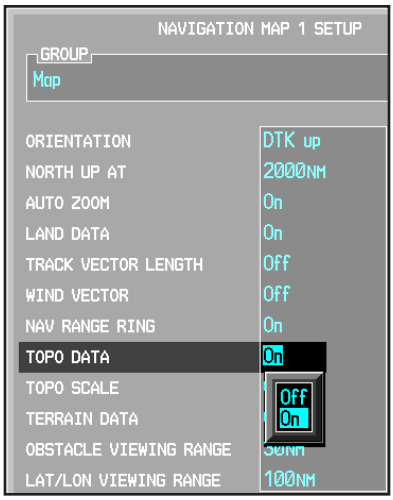


Figure 3-26 Navigation Map Topo Data Selection

3) Press **ENT** to accept the displayed value. The next option will be highlighted.

4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

Topo Scale

The Topo Scale option selects whether the elevation scale for topographical features on the Navigation Map is displayed. The scale will be located on the right side of the display.

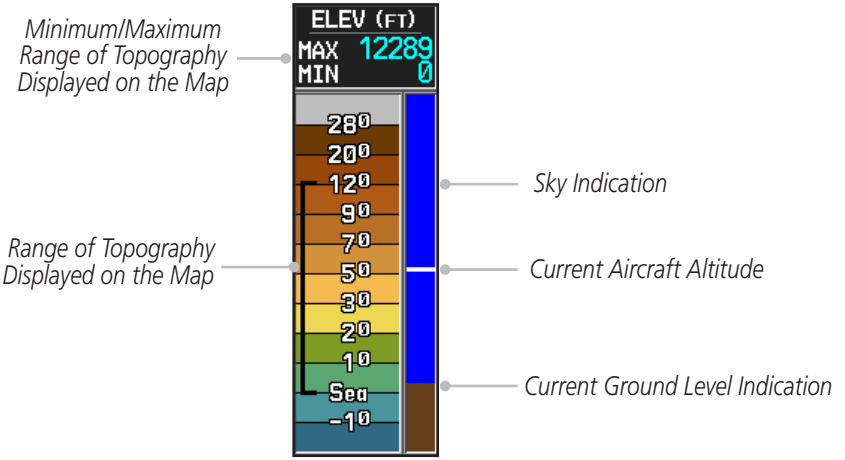


Figure 3-27 Navigation Map Topo Scale

1) While viewing the Navigation Map 1 or 2 of the Map page group, press the **MENU** key. With "Map Setup" highlighted, press **ENT**. With the Map Group active, turn the large **MFD** knob to highlight the "Topo Scale" option.

2) Turn the small **MFD** knob to select On or Off.

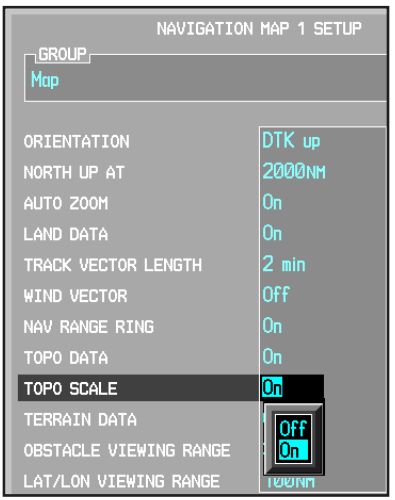


Figure 3-28 Navigation Map Topo Scale Selection

3) Press **ENT** to accept the displayed value. The next option will be highlighted.

4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

Terrain Data

The Terrain Data option selects whether Terrain Data and the Terrain Elevation Scale is shown on the Navigation Map. The Terrain Data scale will be located on the right side of the display. The Terrain Data Icon will be shown when Terrain has been selected.

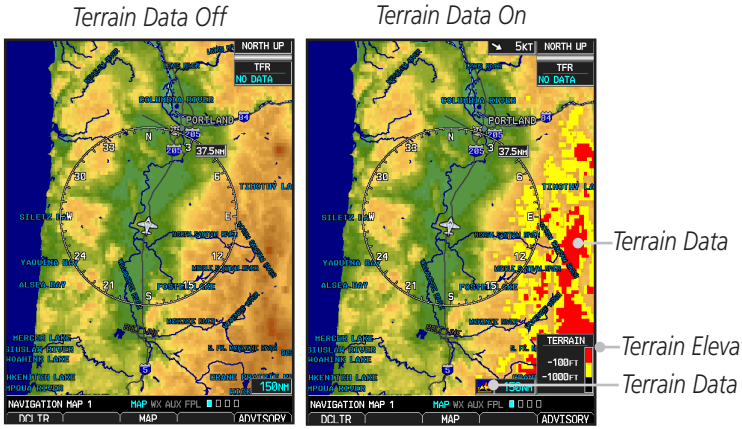


Figure 3-29 Navigation Map Terrain Data

1) While viewing the Navigation Map 1 or 2 of the Map page group, press the **MENU** key. With "Map Setup" highlighted, press **ENT**. With the Map Group active, turn the large **MFD** knob to highlight the "Terrain Data" option.

2) Turn the small **MFD** knob to select On or Off.

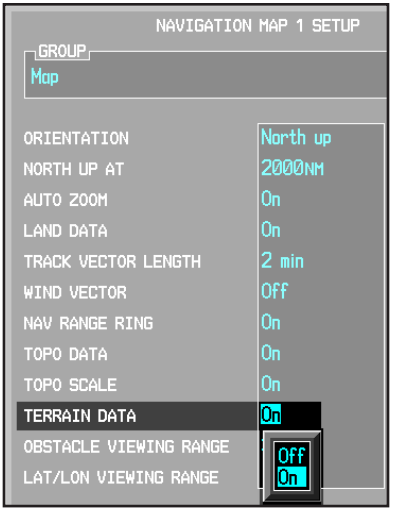


Figure 3-30 Navigation Map Topo Data Selection

3) Press **ENT** to accept the displayed value. The next option will be highlighted.

4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

Obstacle Data Viewing Range

The Obstacle Data Viewing Range option selects whether the Obstacle Data is shown on the Navigation Map and the map range where below that value obstacles will be shown. Map ranges above this value will not show the Obstacle Data.

Unlighted Obstacle (Height is less than 1000 ft AGL)	Lighted Obstacle (Height is less than 1000 ft AGL)	Unlighted Obstacle (Height is greater than 1000 ft AGL)	Lighted Obstacle (Height is greater than 1000 ft AGL)
			

Figure 3-31 Navigation Map Obstacle Icons

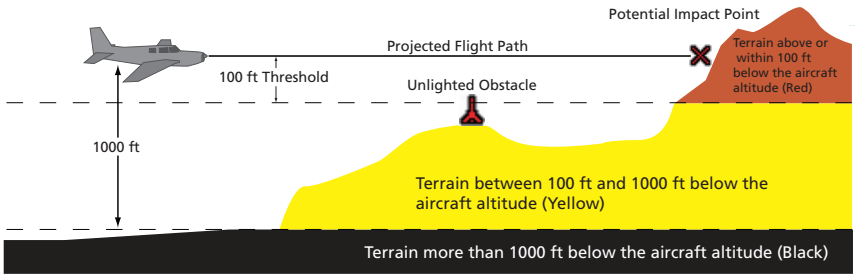


Figure 3-32 TERRAIN Altitude/Color Correlation

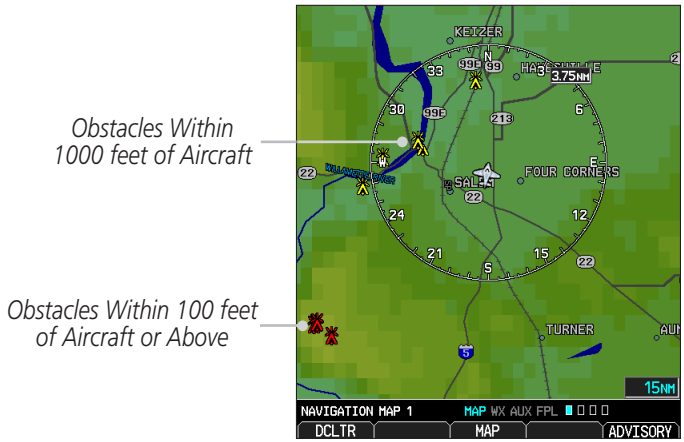


Figure 3-33 Navigation Map Obstacle Data

1) While viewing the Navigation Map 1 or 2 of the Map page group, press the **MENU** key. With "Map Setup" highlighted, press **ENT**. With the Map Group active, turn the large **MFD** knob to highlight the "Obstacle Data" option.

2) Turn the small **MFD** knob to select the viewing range or Off.

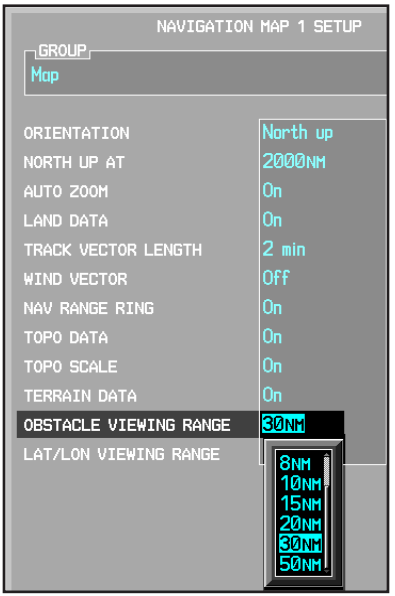


Figure 3-34 Navigation Map Obstacle Data Selection

3) Press **ENT** to accept the displayed value. The next option will be highlighted.

4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

Lat/Lon Viewing Range

The Lat/Lon Viewing Range option allows you to select the map range where below that value Lat/Lon lines will be shown on the MFD. Map ranges above the selected value will not show the Lat/Lon lines. When Off is selected, Lat/Lon lines will not be shown.

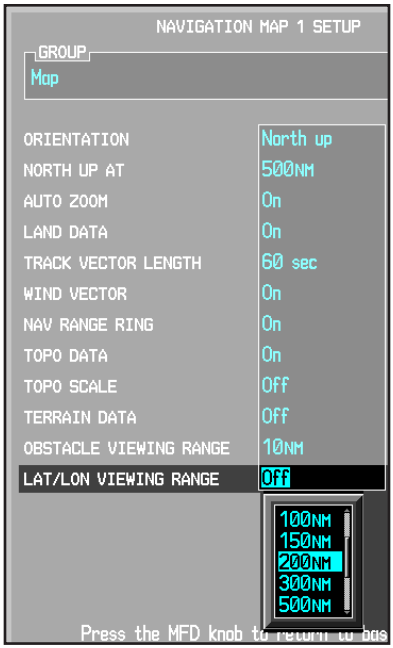


Figure 3-35 Navigation Map Lat/Lon Selection

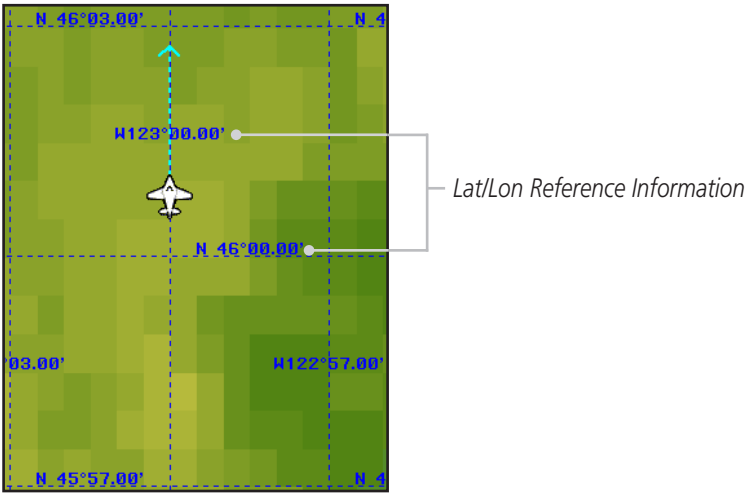


Figure 3-36 Navigation Map Lat/Lon Information

1) While viewing the Navigation Map 1 or 2 of the Map page group, press the **MENU** key. With "Map Setup" highlighted, press **ENT**. With the Map Group active, turn the large **MFD** knob to highlight the "Lat/Lon" option.
2) Turn the small **MFD** knob to change the highlighted value.
3) Press **ENT** to accept the displayed value. The next option will be highlighted.
4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

3.3.3.2 Weather Feature Options (Optional)

The Weather group selection from the Map Setup Page Menu allows you to customize the NEXRAD Viewing Range, NEXRAD Cell Movement, and Lightning Viewing range. Weather is an optional feature that requires a GDL 69/69A and an XM Weather subscription.

1) While viewing the Navigation Map 1 or 2 page of the Map page group, press the **MENU** key to display the Navigation Map Page Menu.

Figure 3-37 Navigation Map Page Menu

2) With the cursor flashing on the "Map Setup" option, press the **ENT** key to display Map Setup Menu.
3) Use the large and small **MFD** knobs to select the Weather Group and press **ENT** to allow editing of the selected group. The groups shown depend on the features available for equipment installed in your aircraft.

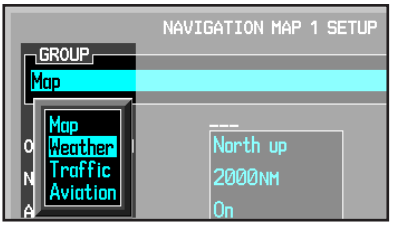


Figure 3-38 Navigation Map Page Menu Weather Group Selection

4) Press the small **MFD** knob to return to the Navigation Map Page.

NEXRAD Viewing Range

The NEXRAD Viewing Range option allows you to select the map range where below that value NEXRAD weather products will be shown on the MFD. When Off is selected, NEXRAD weather will not be shown. Map ranges above the selected value will not show the NEXRAD weather products.

Topo data and NEXRAD may not be displayed at the same time. Turning on either Topo data or NEXRAD will automatically turn off the other one. Turning off either Topo data or NEXRAD will not automatically turn the other one back on.

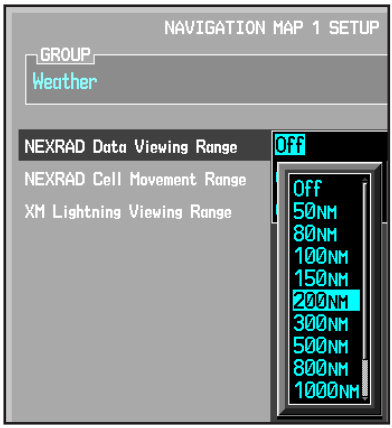


Figure 3-39 NEXRAD Viewing Range Selection

1) While viewing the Navigation Map Setup page and the Weather Group active, turn the large **MFD** knob to highlight the "NEXRAD Viewing Range" option.
2) Turn the small **MFD** knob to change the highlighted value.
3) Press **ENT** to accept the displayed value. The next option will be highlighted.
4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

NEXRAD Cell Movement

The NEXRAD Cell Movement option allows you to select the map range where below that value NEXRAD Cell Movement will appear on the MFD. Map ranges above the selected value will not show NEXRAD Cell Movement. When Off is selected, NEXRAD Cell Movement will not be shown.

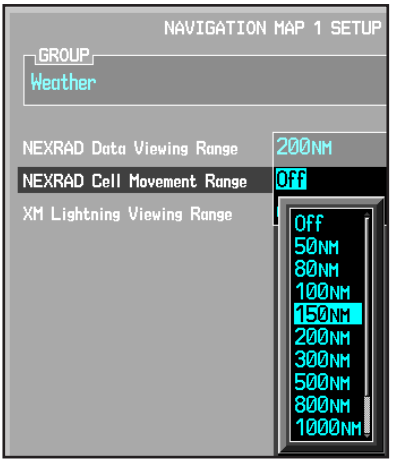


Figure 3-40 NEXRAD Cell Movement Selection

1) While viewing the Navigation Map Setup page and the Weather Group active, turn the large **MFD** knob to highlight the "NEXRAD Cell Movement" option.
2) Turn the small **MFD** knob to turn the function on or off.
3) Press **ENT** to accept the displayed value. The next option will be highlighted.
4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

Lightning Viewing Range

The Lightning Viewing Range option allows you to select the map range where below that value Lightning weather products will be shown on the MFD. Map ranges above the selected value will not show Lightning weather products. When Off is selected, Lightning weather will not be shown.

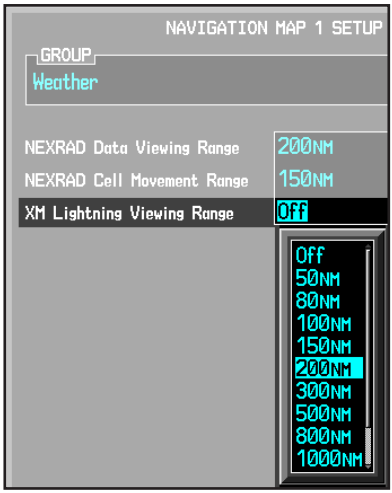


Figure 3-41 Lightning Viewing Range Selection

1) While viewing the Navigation Map Setup page and the Weather Group active, turn the large **MFD** knob to highlight the "Lightning Viewing Range" option.
2) Turn the small **MFD** knob to change the highlighted value.
3) Press **ENT** to accept the displayed value. The next option will be highlighted.
4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

3.3.3.3 Traffic Feature Options (Optional)

The Traffic group selection from the Map Setup Page Menu allows you to customize the display of traffic on the Navigation Map. The Traffic function requires the installation of the appropriate traffic device. TIS and TAS cannot be displayed at the same time. If the aircraft has a TAS unit installed, the GDU 620 will be configured for TAS. If no TAS unit is installed and a GTX transponder is installed then the GDU 620 will be configured for TAS. A pilot can tell which data is being displayed by the label in the top left corner (TAS OPERATING vs TIS OPERATING). TIS data comes from a GTX transponder. Coverage is limited to specific areas as shown in the AIM. TAS data comes from a TAS unit such as a Skywatch 497, KTA 810, or other unit. Coverage follows the airplane.

Traffic Selection	Display Result
Off	No traffic displayed
All Traffic	All types of traffic displayed
TA/PA	Traffic Alerts and Proximity Alerts displayed
TA Only	Traffic Alerts Only displayed

Table 3-3 Navigation Map Traffic Display Options

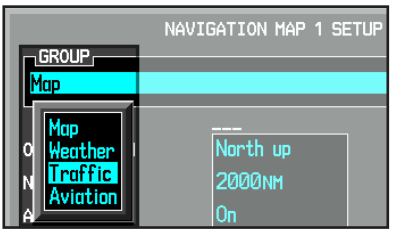


Figure 3-42 Navigation Map Page Menu Traffic Group Selection

1) While viewing the Navigation Map Setup page and the Traffic Group active, turn the large **MFD** knob to highlight the "Traffic" options.

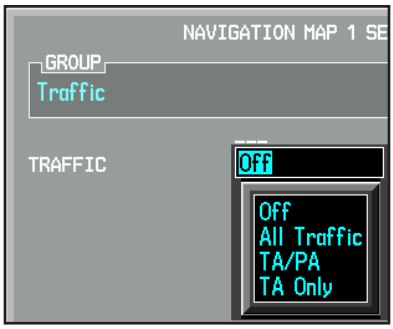


Figure 3-43 Navigation Map Page Menu Traffic Options

2) Turn the small **MFD** knob to change the highlighted value.

3) Press **ENT** to accept the displayed value.

4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

3.3.3.4 Aviation Feature Options

The Aviation group selection from the Map Setup Page Menu allows you to customize the display of SafeTaxi information, Runway Extensions, Intersection/NDB locations, VOR locations, and TFR icons on the Navigation Map.

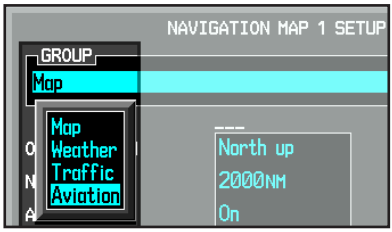


Figure 3-44 Navigation Map Page Menu Aviation Group Selection

SafeTaxi

The SafeTaxi viewing range option allows you to select the map range where below that value SafeTaxi information will be shown on the MFD. Map ranges above the selected value will not show SafeTaxi. When Off is selected, SafeTaxi information will not be shown.

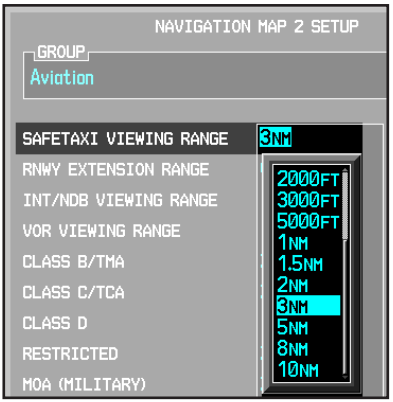


Figure 3-45 Navigation Map Safe Taxi Range Selection

1) While viewing the Navigation Map Setup page and the Aviation Group active, turn the large **MFD** knob to highlight the "SafeTaxi Range" option.
2) Turn the small **MFD** knob to change the highlighted value.
3) Press **ENT** to accept the displayed value. The next option will be highlighted.
4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

Runway Extension Range

The Runway Extension Range option allows you to select the range at and below that Runway Extensions will be shown from the destination airport runway. Map ranges above the selected value will not show Runway Extensions. When Off is selected, Runway Extensions will be shown.

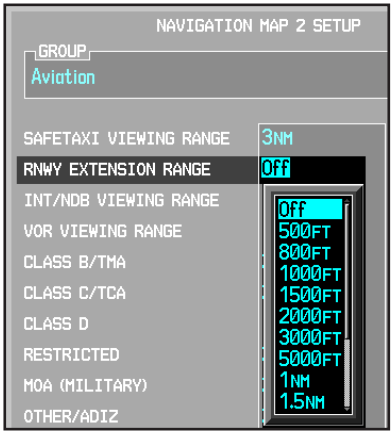


Figure 3-46 Navigation Map Runway Extension Selection

1) While viewing the Navigation Map Setup page and the Aviation Group active, turn the large **MFD** knob to highlight the "Runway Extension" option.
2) Turn the small **MFD** knob to change the highlighted value.
3) Press **ENT** to accept the displayed value. The next option will be highlighted.
4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

INT/NDB Viewing Range

The INT/NDB viewing range option allows you to select the map range where below that value Intersection and NDB information will be shown on the MFD. Map ranges above the selected value will not show Intersection and NDB information. When Off is selected, the information will not be shown.

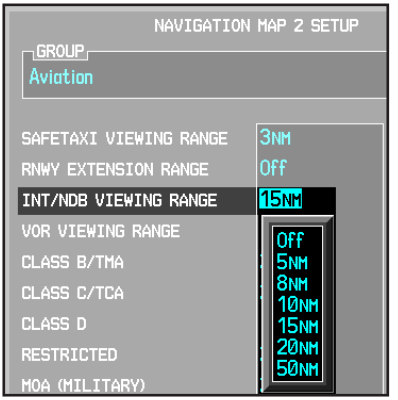


Figure 3-47 Navigation Map INT/NDB Viewing Range Selection

1) While viewing the Navigation Map Setup page and the Aviation Group active, turn the large **MFD** knob to highlight the "INT/NDB" option.
2) Turn the small **MFD** knob to change the highlighted value.
3) Press **ENT** to accept the displayed value. The next option will be highlighted.
4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

VOR Viewing Range

The VOR viewing range option allows you to select the map range and below where VOR information will appear on the MFD. Map ranges above the selected value will not show VOR information. When Off is selected, the information will not be shown.

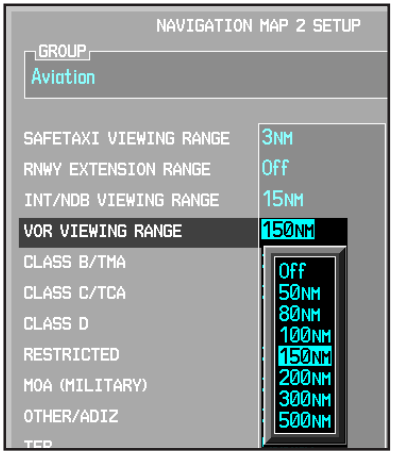


Figure 3-48 Navigation Map VOR Viewing Range Selection

1) While viewing the Navigation Map Setup page and the Aviation Group active, turn the large **MFD** knob to highlight the "VOR Viewing Range" option.
2) Turn the small **MFD** knob to change the highlighted value.
3) Press **ENT** to accept the displayed value. The next option will be highlighted.
4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

Class B/TMA Airspace Viewing Range

The Class B/TMA airspace viewing range option allows you to select the map range and below where Class B/TMA airspace information will appear on the MFD. Map ranges above the selected value will not show Class B/TMA airspace information. When Off is selected, the information will not be shown.

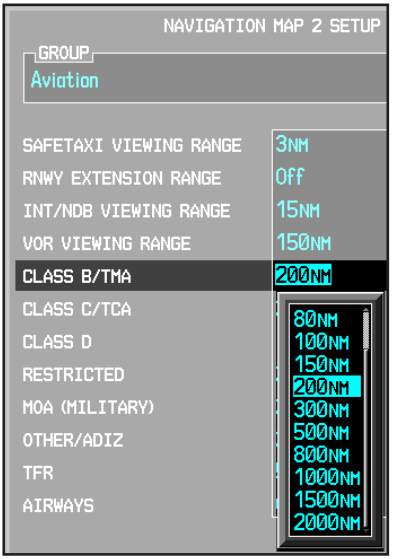


Figure 3-49 Navigation Map Class B/TMA Viewing Range Selection

1) While viewing the Navigation Map Setup page and the Aviation Group active, turn the large **MFD** knob to highlight the "Class B/TMA Viewing Range" option.
2) Turn the small **MFD** knob to change the highlighted value.
3) Press **ENT** to accept the displayed value. The next option will be highlighted.
4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

Class C/TCA Airspace Viewing Range

The Class C/TCA airspace viewing range option allows you to select the map range and below where Class C/TCA airspace information will appear on the MFD. Map ranges above the selected value will not show Class C/TCA airspace information. When Off is selected, the information will not be shown.

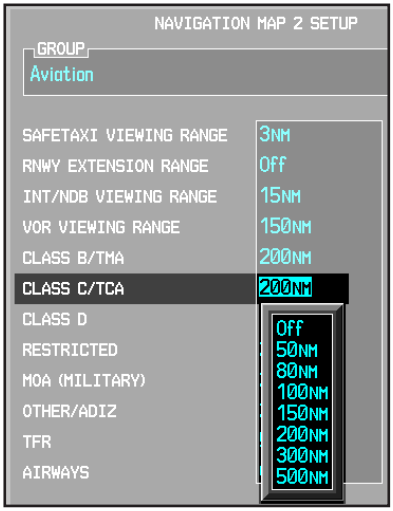


Figure 3-50 Navigation Map Class C/TCA Viewing Range Selection

1) While viewing the Navigation Map Setup page and the Aviation Group active, turn the large **MFD** knob to highlight the "Class C/TCA Viewing Range" option.
2) Turn the small **MFD** knob to change the highlighted value.
3) Press **ENT** to accept the displayed value. The next option will be highlighted.
4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

Class D Airspace Viewing Range

The Class D airspace viewing range option allows you to select the map range and below where Class D airspace information will appear on the MFD. Map ranges above the selected value will not show Class D airspace information. When Off is selected, the information will not be shown.

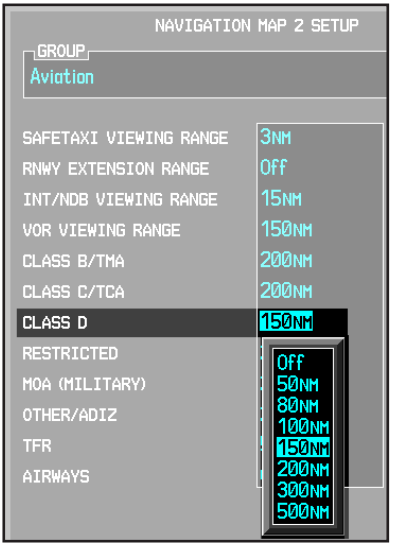


Figure 3-51 Navigation Map Class D Viewing Range Selection

1) While viewing the Navigation Map Setup page and the Aviation Group active, turn the large **MFD** knob to highlight the "Class D Viewing Range" option.
2) Turn the small **MFD** knob to change the highlighted value.
3) Press **ENT** to accept the displayed value. The next option will be highlighted.
4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

Restricted Airspace Viewing Range

The Restricted airspace viewing range option allows you to select the map range and below where Restricted airspace information will appear on the MFD. Map ranges above the selected value will not show Restricted airspace information. When Off is selected, the information will not be shown.

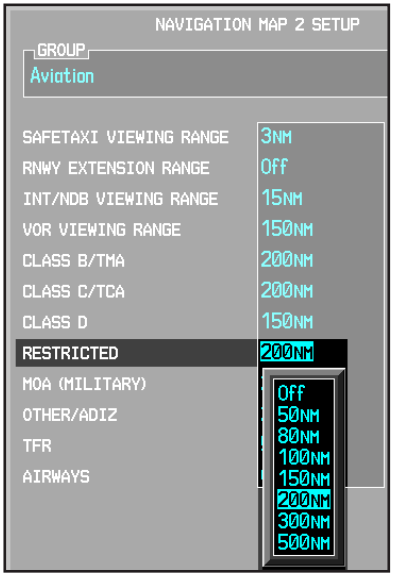


Figure 3-52 Navigation Map Restricted Airspace Viewing Range Selection

1) While viewing the Navigation Map Setup page and the Aviation Group active, turn the large **MFD** knob to highlight the "Restricted Viewing Range" option.
2) Turn the small **MFD** knob to change the highlighted value.
3) Press **ENT** to accept the displayed value. The next option will be highlighted.
4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

MOA (Military) Viewing Range

The MOA (Military) viewing range option allows you to select the map range and below where MOA (Military) information will appear on the MFD. Map ranges above the selected value will not show MOA airspace information. When Off is selected, the information will not be shown.

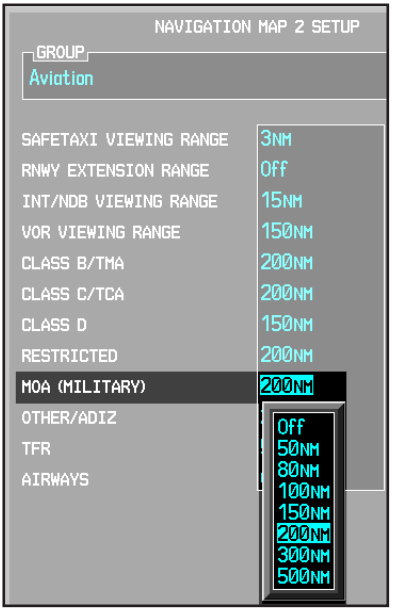


Figure 3-53 Navigation Map MOA (Military) Viewing Range Selection

1) While viewing the Navigation Map Setup page and the Aviation Group active, turn the large **MFD** knob to highlight the "MOA (Military) Viewing Range" option.
2) Turn the small **MFD** knob to change the highlighted value.
3) Press **ENT** to accept the displayed value. The next option will be highlighted.
4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

Other/ADIZ Airspace Viewing Range

The Other/ADIZ airspace viewing range option allows you to select the map range and below where Other/ADIZ airspace information will appear on the MFD. Map ranges above the selected value will not show Other/ADIZ airspace information. When Off is selected, the information will not be shown.

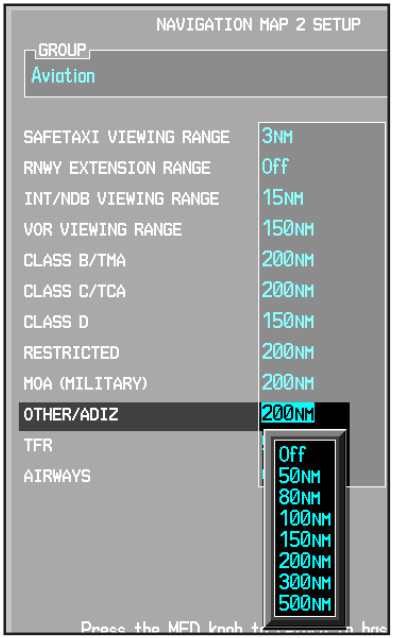


Figure 3-54 Navigation Map Other/ADIZ Viewing Range Selection

1) While viewing the Navigation Map Setup page and the Aviation Group active, turn the large **MFD** knob to highlight the "Other/ADIZ Viewing Range" option.
2) Turn the small **MFD** knob to change the highlighted value.
3) Press **ENT** to accept the displayed value. The next option will be highlighted.
4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

TFR Viewing Range

The Temporary Flight Restriction (TFR) viewing range option allows you to select the map range where below that value TFR information will be shown on the MFD. Map ranges above the selected value will not show TFR information. When Off is selected, the information will not be shown.

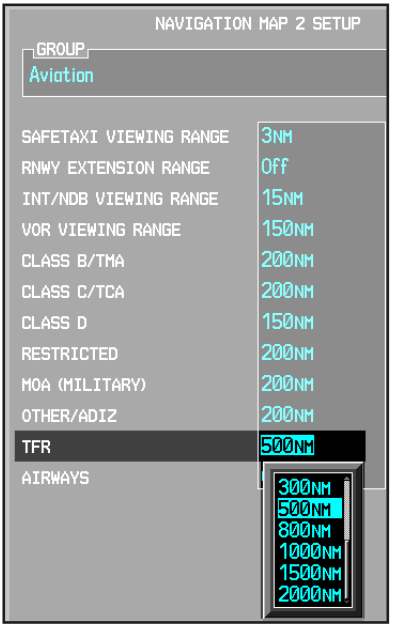


Figure 3-55 Navigation Map TFR Viewing Range Selection

1) While viewing the Navigation Map Setup page and the Aviation Group active, turn the large **MFD** knob to highlight the "TFR" option.
2) Turn the small **MFD** knob to change the highlighted value.
3) Press **ENT** to accept the displayed value.
4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to another option.

Airways

The Airways option allows you to select the airways that will appear on the MFD. Map ranges above the selected value will not show Airways. When Off is selected, airways will not be shown.

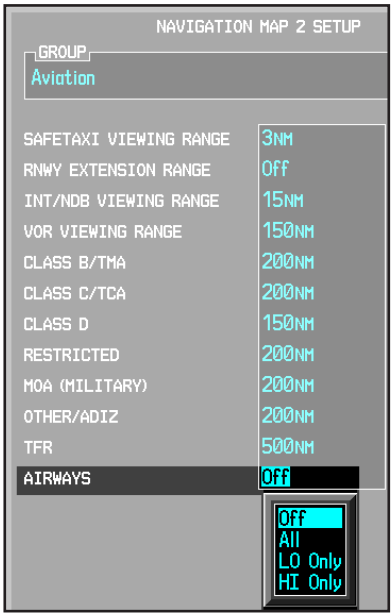


Figure 3-56 Airways Selection

1) While viewing the Navigation Map Setup page and the Aviation Group active, turn the large **MFD** knob to highlight the "Airways" option.
2) Turn the small **MFD** knob to change the highlighted value.
3) Press **ENT** to accept the displayed value. The next option will be highlighted.
4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

3.4 Aux Mode Pages

The Aux mode provides pages for System Setup, XM Information (if installed), and system Status.

3.4.1 System Settings

G600 system settings are managed from the Aux Mode System Setup Page. The following settings can be changed:

- Display Brightness (Mode and Level)
- Airspeeds (Glide, V_R, V_X, and V_Y)
- Dual Unit Synchronization (CDI and Baro)
- Date/Time (Date, Time, Time Format, and Time Offset)
- MFD Display Units (Distance/Speed and Altitude/Vertical Speed)
- System Display Units (Navigation Angle Reference, Pressure Units, and Temperature Units)

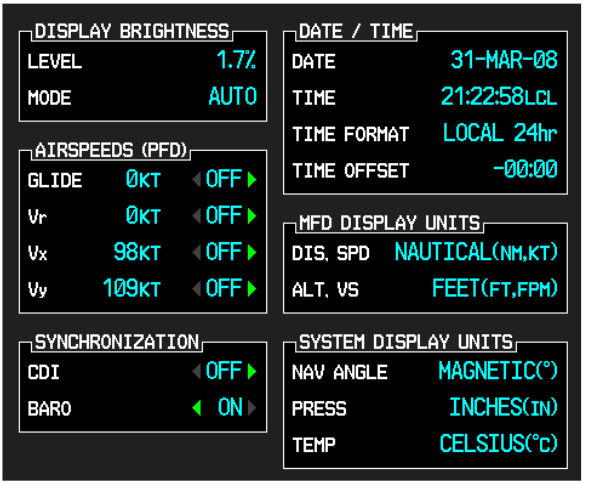


Figure 3-57 Aux Mode System Setup Page

The default values set by the installer during installation are restored by using the Page Menu options. The "Restore Unit Defaults" selection restores all default settings. Pressing the **DFLT UNIT** soft key will also restore the Default Unit settings. The "Restore Airspeed Defaults" selection restores only the Airspeed Reference default settings.

1) While viewing the Aux mode System Setup page, press the **MENU** key.

Figure 3-58 Aux Mode System Setup Page Menu

2) Turn the large or small **MFD** knobs to highlight the desired selection and then press **ENT**.

3.4.1.1 Display Brightness

Display brightness mode may be set to manual or automatic. The automatic mode will set the display brightness based on the ambient light. The manual mode allows the setting of display brightness between 0 and 100%.

1) Turn the large **MFD** knob to reach the AUX page group. Press the small **MFD** knob to activate the cursor.

2) The Level will be highlighted. Turn the small **MFD** knob to select the Display Brightness Level and then press **ENT.**

Figure 3-59 Aux Mode Display Brightness Level Selection

3) If the Level was changed, Manual will be selected. Press the cursor to save the settings. If you press **ENT** the Mode setting will be highlighted.

4) With the Mode value highlighted, turn the small **MFD** knob to select Auto or Manual and then press **ENT.**

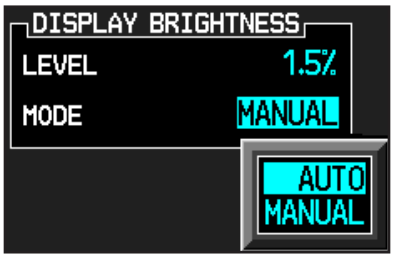


Figure 3-60 Aux Mode Display Brightness Mode Selection

3.4.1.2 Airspeed Reference Marks

The Best Glide, Vr, Vx, and Vy airspeed reference marks for the PFD are adjusted with this function. A marker will appear on the PFD Airspeed tape at the selected speed when the value is set to "On." Default reference airspeeds are set during installation. When power is recycled, the values you set will be retained.

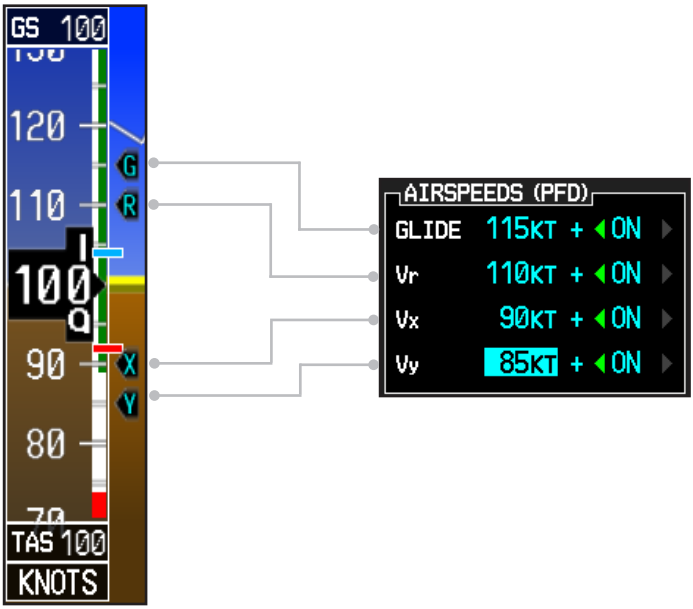


Figure 3-61 Airspeed References shown on PFD when activated

1) While viewing the System Setup page of the AUX page group, press the small **MFD** knob to activate the cursor. Turn the large **MFD** knob to highlight the desired Airspeeds value.
2) Turn the small **MFD** knob to select the value and press **ENT**.
3) The On/Off setting will now be highlighted. Turn the small **MFD** knob to select On or Off and press **ENT**. The next value will be highlighted.

3.4.1.3 Synchronization (Dual Installations Only)

Dual GDU 620 units when connected in the aircraft may be set up to communicate and share information by "Crossfilling" or synchronizing information between the two units.

When Barometric Correction is synchronized, any changes to the Barometric Setting on either GDU will change it on both GDUs.

Crossfill synchronization for CDI and Baro Corrections are selected in Aux mode.

1) While viewing the first page of the AUX page group, press the small **MFD** knob and turn the large **MFD** knob to highlight "CDI" or "BARO" in the "Synchronization" box in both units.

Figure 3-62 Dual Unit Synchronization

2) Turn the small **MFD** knob to select "ON" or "OFF."

3) Press **ENT**.

3.4.1.4 Date and Time

The Date and Time options allow you to select the time to change UTC time to local time with a time offset.

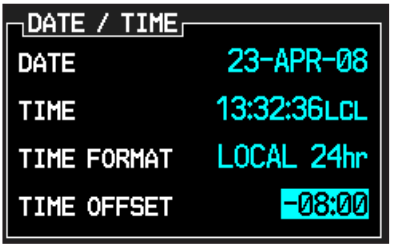


Figure 3-63 Time Format and Offset

Time Zone	Local Standard Time Offset	Local Daylight Savings Time Offset
Atlantic	-4 hours	-3 hours
Eastern	-5 hours	-4 hours
Central	-6 hours	-5 hours
Mountain	-7 hours	-6 hours
Pacific	-8 hours	-7 hours
Alaskan	-9 hours	-8 hours
Hawaiian	-10 hours	-9 hours

Table 3-4 U.S. Time Zone Offsets

1) While viewing the System Setup page of the AUX page group, press the small **MFD** knob to activate the cursor. Turn the large **MFD** knob to highlight "Time Format."
2) Turn the small **MFD** knob to select Local 12hr, Local 24hr, or UTC and then press **ENT**. When Local 12 or 24 hr mode is selected, the Time Offset value will then be highlighted.
3) Turn the small **MFD** knob to select the desired offset and then press **ENT**.

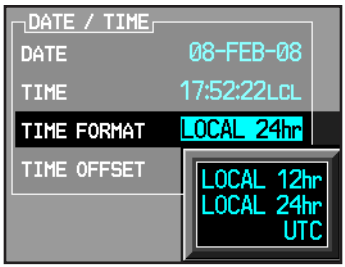


Figure 3-64 Date and Time Values

4) A Time Offset may be entered by using the large and small **MFD** knobs to change the values. Press **ENT** after completing any changes.

5) Press the small **MFD** knob to exit adjustments.

3.4.1.5 MFD Display Units

The MFD Display Units options allow you to select the units of measurement conventions displayed on the MFD. Distance and Speed selections are Imperial, Metric, or Nautical. Altitude and Vertical speed selections are Feet or Meters.

1) While viewing the System Setup page of the AUX page group, press the small **MFD** knob to activate the cursor. Turn the large **MFD** knob to highlight the Distance and Speed (DIS, SPD) units of measurement.

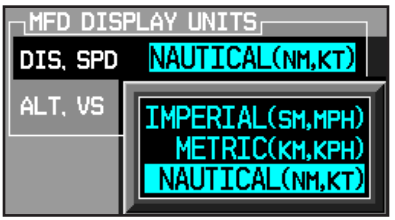


Figure 3-65 Distance and Speed MFD Display Units

2) Turn the small **MFD** knob to select Imperial, Metric, or Nautical and then press **ENT**. The Altitude and Vertical Speed units selection will now be highlighted.

3) Turn the small **MFD** knob to select Feet or Meters and then press **ENT**.

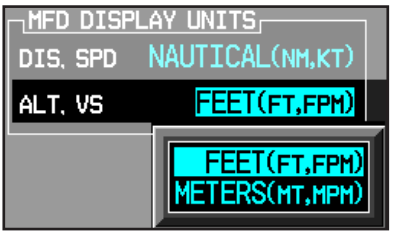


Figure 3-66 Altitude and Vertical Speed MFD Display Units

3.4.1.6 System Display Units

The System Display Units options allows the selection of units to display values for Navigation Angle (Magnetic or True), Barometric Setting (inches or Hectopascals), and Temperature (Fahrenheit or Celsius). Pressing the **DFLT UNIT** soft key will restore the Default Unit settings.

1) While viewing the System Setup page of the AUX page group, press the small **MFD** knob to activate the cursor. Turn the large **MFD** knob to highlight the System Display Units selection titled "Nav Angle."

CAUTION: *The Nav Angle display units (Magnetic or True) should be set to the same type in both the GDU 620 and GNS navigators.*

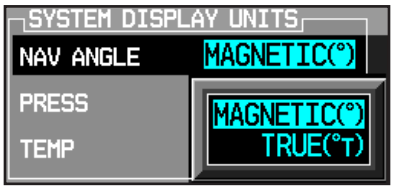


Figure 3-67 Nav Angle System Display Units

2) Turn the small **MFD** knob to select Magnetic or True and then press **ENT**. The Barometric Pressure Setting value will now be highlighted.

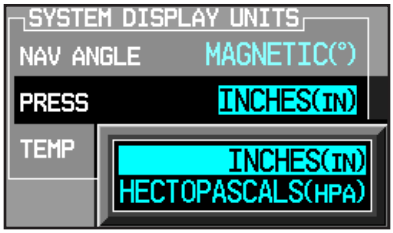


Figure 3-68 Barometric Setting System Display Units

3) Turn the small **MFD** knob to select the Barometric Setting units and then press **ENT**. The Temperature value will now be highlighted.

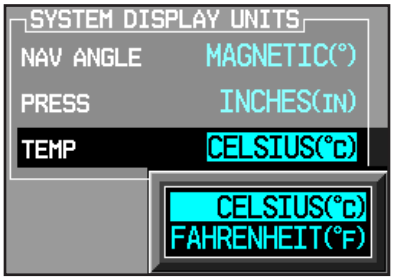


Figure 3-69 Temperature System Display Units

4) Turn the small **MFD** knob to select the Temperature units and then press **ENT**.

3.4.2 XM Information (Optional)

The Aux mode XM Information page displays information about the XM radios, service, and products when the GDL 69/69A is installed and the XM Radio service is activated.

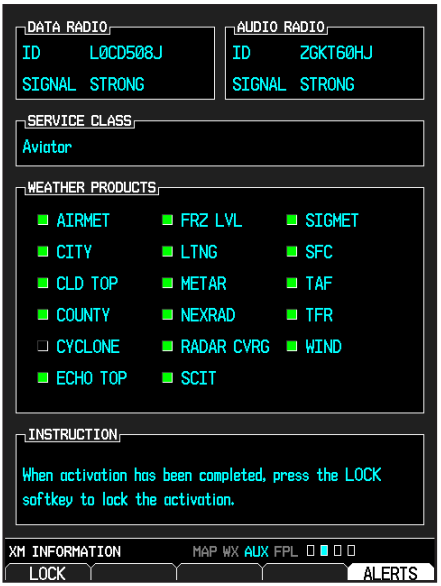


Figure 3-70 XM Information

3.4.3 XM Entertainment Radio (Optional)

Audio entertainment is available through the XM Satellite Radio Service when activated in the optional installation of the GDL 69A. The GDU 620 serves as the display and control head for your remotely mounted GDL 69A. XM Satellite Radio allows you to enjoy a variety of radio programming over long distances without having to constantly search for new stations. Based on signal from satellites, coverage far exceeds land-based transmissions. When enabled, the XM Satellite Radio audio entertainment is accessible in Aux Mode.

The information on the XM Satellite Radio display is composed of four areas: the Active Channel, Available Channels, Category of the highlighted Channel, and the Volume setting. The Active Channel window shows the Channel Name and Number, Artist, Song Title, and Category.

1) Turn the large **MFD** knob to the AUX page group.
2) Turn the small **MFD** knob to the XM Radio page.

Figure 3-71 XM Entertainment Radio

A description of XM Entertainment Radio is provided in Section 5 - Additional Features.

3.4.4 System Status

The System Status Page displays the statuses, serial numbers, and software version numbers for all detected system LRUs. Pertinent information on all system databases is also displayed. Active LRUs are indicated by green check marks; failed LRUs by red "X's." Failed LRUs should be noted and a service center or Garmin-authorized dealer informed.

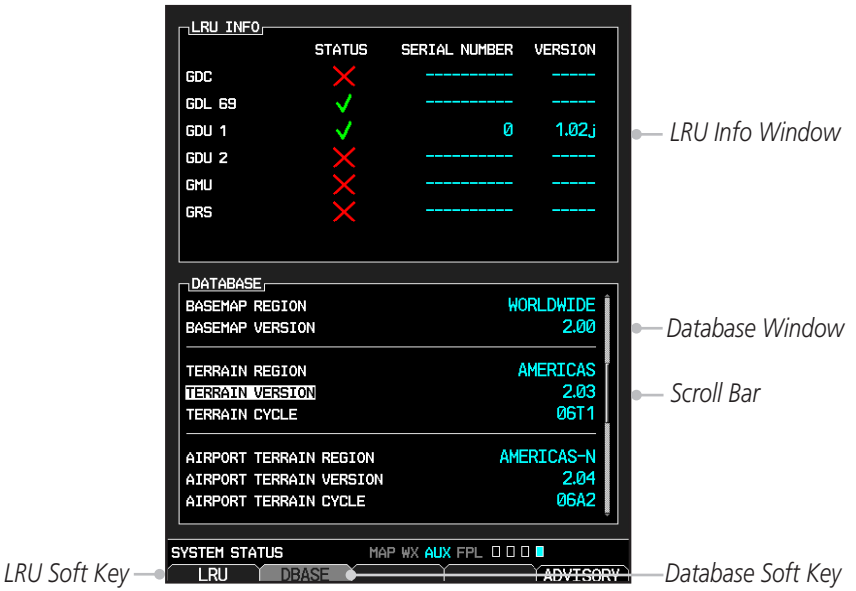


Figure 3-72 LRU and Database Information

1) Turn the large **MFD** knob to the AUX page group.
2) Turn the small **MFD** knob to the System Status page.
3) Press the **LRU** soft key to highlight the first item in the LRU Info window.
4) Turn the small **MFD** knob to scroll through the items in the LRU Info window in case more items are available than are displayed. If more items are available than can be displayed in the window, a scroll bar will show on the right side of the window.
5) Press the **DBASE** soft key to highlight the first item in the Database window.
6) Turn the small or large **MFD** knobs to scroll through the items in the Database window in case more items are available than are displayed. If more items are available than can be displayed in the window, a scroll bar will show on the right side of the window.

3.5 Flight Plan Pages

Use the Flight Plan page group to view details about your flight plan route. The Flight Plan Function shows the Current Flight Plan that is active in the navigation source displayed on the CDI.

3.5.1 Active Flight Plan Page

The Active Flight Plan box shows all of the legs of your flight plan with the current leg indicated in magenta. Listed are each leg with the Desired Track (DTK), Distance (DIS), and Estimated Time of Arrival (ETA) for the legs. METARs are shown for waypoints in the flight plan. In the Active Leg Info box in the lower part of the display, the Course with beginning and ending waypoints, Active Leg En Route Safe Altitude (ESA), and Route ESA are shown.

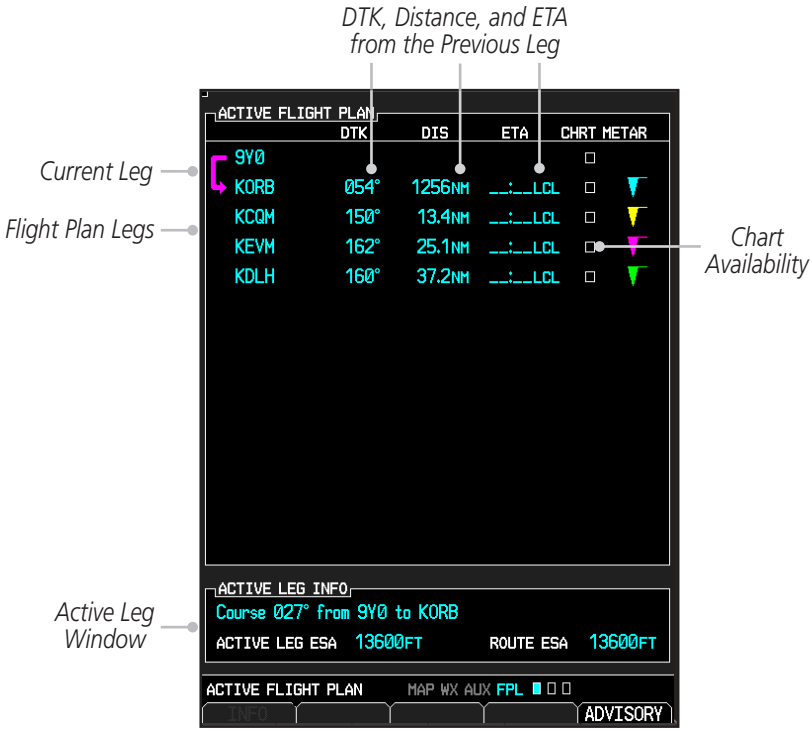


Figure 3-73 Flight Page 1 (Active Flight Plan)

3.5.1.1 Active Flight Plan Detail

The active flight plan is shown on the first page of the Flight Plan page group. Further information may be available for each waypoint as shown by the **INFO** or **WX** soft keys. The WX key will only appear if a GDL 69/69A is installed and there is an XM Weather subscription.

1) Press the **MFD** knob and then use the large and small **MFD** knobs to highlight waypoints in the flight plan.
2) Press the **INFO** soft key, if available, to view information about the highlighted waypoint.
3) Press the **WX** soft key, if available, to view XM weather information about the highlighted waypoint.
4) Press the small **MFD** knob to return to the Active Flight Plan page.

3.5.1.2 Active Flight Plan Options

The Active Flight Plan page provides information for the flight plan currently in use for navigation.

To change data fields on the Active Flight Plan Page:

1) While viewing the Active Flight Plan Page of the FPL page group, press **MENU** to display the Active Flight Plan Page Options window.
2. Turn the large **MFD** knob to highlight "Change Fields?" and then press **ENT**.

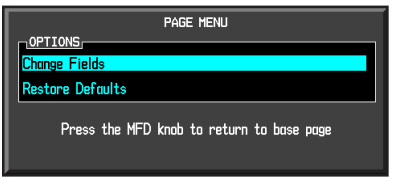


Figure 3-74 Active Flight Plan Page Menu Option Selection

3) Turn the large **MFD** knob to highlight the field you wish to change.

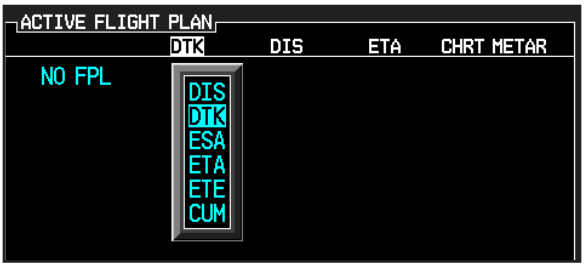


Figure 3-75 Active Flight Plan Page Menu Change Fields Option Selection

4) Turn the small **MFD** knob to select the desired data item and press **ENT**.

5) Press the small **MFD** knob to remove the cursor.

To restore factory default settings for data fields on the Active Flight Plan Page:

1) While viewing the Active Flight Plan Page of the FPL page group, press **MENU** to display the Active Flight Plan Page Options window.

2) Turn the large **MFD** knob to highlight "Restore Defaults?" and then press **ENT**.

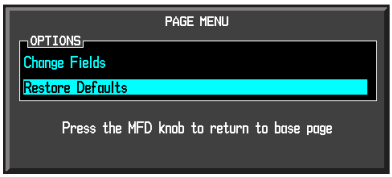


Figure 3-76 Active Flight Plan Page Menu Option Selection to Restore Defaults

3.5.2 Waypoint Information Page

The Waypoint Information page provides information about a particular waypoint. You can show a waypoint by selecting it by Ident, Facility Name, or by City. The Map window shows the selected waypoint in the center of the map. The Range keys zoom in and out on the map. The Info window at the bottom of the display shows the Bearing and Distance from your present position to the selected waypoint as well as its region and Lat/Lon coordinates. The map window is set up with the same parameters as were selected for Navigation Map Page 1.

Figure 3-77 Flight Plan Waypoint Information Page

NOTE: *Waypoint information is shown on the second page of the Flight Plan page group.*

3.5.2.1 Selecting a Waypoint

1) While viewing the Waypoint Information page of the FPL page group, press the **MFD** knob and use the large and small **MFD** knobs to select the identifier for the waypoint.
2) Press the **ENT** key to select the waypoint.
3) Use the **RNG** (Range) ▲ ▼ keys to zoom in or out on the map view.

3.5.2.2 Waypoint Weather Detail (Optional)

METAR and TAF text are displayed on the Waypoint Weather Information Page if the GDL 69/69A is installed and an XM weather subscription is current. Pressing the **WX** soft key will show the weather information page. METAR data is displayed first in a decoded fashion, then as raw text. TAF information is displayed only in its raw form.

TAF (Terminal Aerodrome Forecast) is the standard format for 24-hour weather forecasts. A TAF typically forecasts significant weather changes, temporary changes, probable changes, and expected changes in weather conditions.

Figure 3-78 Textual METARs and TAFs

3.5.2.3 Waypoint Information Detail

More detailed information about a selected waypoint is available by pressing the **INFO** soft key on the Waypoint Information page. The current destination waypoint is the default item shown. You may select a different Ident, Facility, or Location. In the Runway window, you may view information about the runways available if a highlighted arrow is shown. In the Frequency window, a scroll bar is shown on the right side of the window when more frequencies are available.

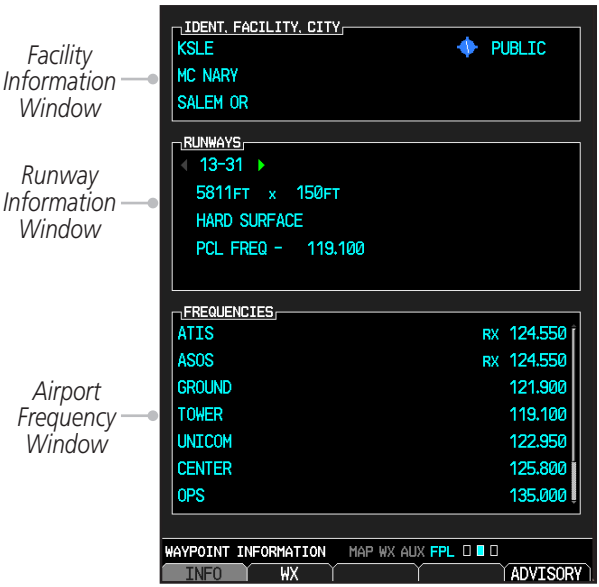


Figure 3-79 Flight Plan Waypoint Info Detail

Ident/Facility/City Selection

The current destination Identifier, Facility Type with icon, Facility Name, and City (location) are shown in the top window of the Flight Plan mode Waypoint Information page. The default is the Nearest airport if there is no active flight plan.

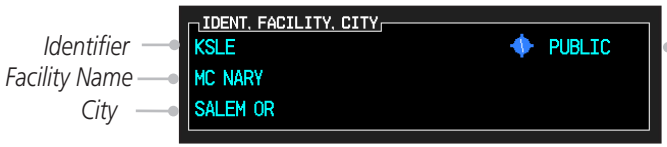


Figure 3-80 Flight Plan Ident/Facility/City Detail

1) While viewing the Waypoint Information page of the FPL page group, press the **INFO** soft key to view information about the waypoint.
2) The current destination Ident, Facility, and City is shown, but may be changed to find information about other choices. Press the small **MFD** knob to activate the cursor.
3) Use the large **MFD** knob to highlight the field you wish to change and use the small **MFD** knob to change the value.
4) Press the **ENT** key to save the selected value or press the small **MFD** knob to cancel editing.

Runway Information Selection

Information is provided for each runway showing the following detail: runway number, runway length, surface type, and the frequency for Pilot-Controlled Lighting (PCL).

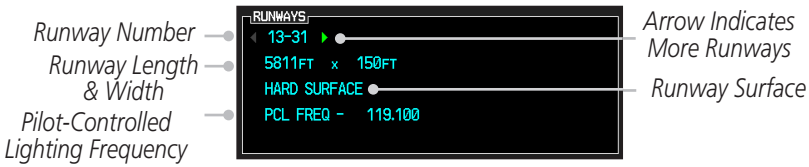


Figure 3-81 Waypoint Runway Information

1) While viewing the Waypoint Information page of the FPL page group, press the **INFO** soft key to view information about the waypoint and press the small **MFD** knob to activate the cursor.
2) Use the large **MFD** knob to highlight the Runway and use the small **MFD** knob to display the available runways.
3) Press the small **MFD** knob to cancel editing.

Facility Frequency Selection

The Frequency window at the bottom of the Waypoint Information page shows the frequencies available for the selected waypoint. A scroll bar is shown on the right side of the Frequency window if more frequencies are available.

Figure 3-82 Waypoint Frequency Information

1) While viewing the Waypoint Information page of the FPL page group, press the **INFO** soft key to view information about the waypoint and then press the small **MFD** knob to activate the cursor.
2) Turn the small **MFD** knob to scroll through the available frequencies.
3) Press the small **MFD** knob to exit.

3.5.2.2 Waypoint Weather Information (Optional)

The Weather information function is available if a GDL 69/69A is installed and weather information is available for the selected waypoint.

Figure 3-83 Waypoint Weather Information

1) While viewing the Waypoint Information page of the FPL page group, press the **WX** soft key to view weather information for the waypoint.
2) Use the small **MFD** knob or the large **MFD** knob to scroll through the available information.
3) Press the small **MFD** knob to return to the main Flight Plan page.

3.5.3 Charts Page (Optional)

Charts, when installed, are available in the Flight Plan page group.

1) Turn the large **MFD** knob to the Flight Plan page group.
2) Turn the small **MFD** knob to the Charts page.

NOTE: *There are two options for chart services: FliteCharts or ChartView. FliteCharts displays charts published by the National Aeronautical Charting Office (NACO). ChartView displays charts published by Jeppesen. ChartView charts are geo-referenced, which allows a pink ownship icon to be overlayed on the chart indicating the aircraft location.*

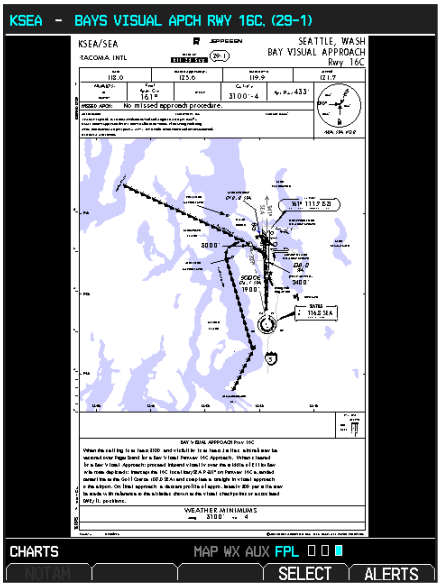


Figure 3-84 Flight Page 3 (Charts)

3.5.3.1 Viewing Charts

The chart for the selected destination airport or approach is automatically loaded.

1) While viewing the Charts page of the FPL page group, press the **RNG** (Range) keys to zoom in and out.

2) After zooming in, you may only see part of the chart. Press the **Small** MFD knob to enter Pan mode and activate scroll bars on the edges of the chart. Turn the large and small **MFD** knobs to move around the chart.

NOTE: *When Panning mode is active, scroll bars will be shown on the right side and bottom of the display.*

3) Press the small **MFD** knob to cancel the scroll bars and exit panning.

3.5.3.2 Selecting a New Chart by Airport

A chart for a different airport may be chosen by selecting the identifier for the desired airport.

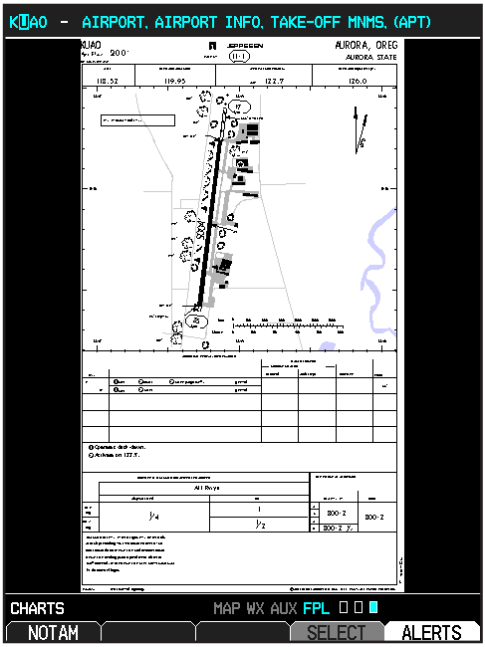


Figure 3-85 Airport Identifier Selection

1) While viewing the Charts page of the FPL page group, press the **SELECT** soft key to change the airport.
2) Use the large **MFD** knob to move the cursor to highlight a character.
3) Use the small **MFD** knob to change the character.
4) Press **ENT** to accept the selected airport.
5) Use the large and small **MFD** knobs to select the desired chart.
6) Press **ENT** to display the desired chart.

3.5.3.3 Selecting a New Chart by FPL, NRST, or RECENT

You may select other charts to display based on your flight plan (FPL), charts of the nearest airport (NRST), or your most recently selected airport (RECENT).

Figure 3-86 Chart Category Selection

1) While viewing the Charts page of the FPL page group, press the **SELECT** soft key.
2) Turn the small **MFD** knob counterclockwise.
3) Turn the small **MFD** knob to show FPL, NRST, or RECENT.
4) Turn the large **MFD** knob to highlight the desired airport, and then press **ENT**.

3.5.3.4 Change Day/Night View

The Chart pages can be displayed on a white or black background for day or night viewing. The Day View offers a better presentation in a bright environment. The Night View gives a better presentation for viewing in a dark environment. The "auto" setting allows the user to set a percentage. This percentage is the backlight value where the charts page will automatically switch between day and night mode. If you set the unit to AUTO 10%, then if the backlight is below 10% it will be in night mode, if above 10% it will be in day mode.

1) While viewing the Charts page of the FPL page group, turn the small **MFD** knob to reach the Charts page.
2) Press **MENU** to display the Options menu.
3) Press **ENT** to display the Chart Setup menu. The Color Scheme option will be highlighted.
4) Turn the small **MFD** knob to select Day - Auto - Night.
5) Press the small **MFD** knob or the **ENT** key to save the selected setting and return to the Charts page.
6) If "Auto" is selected, turn the large **MFD** knob to highlight the Display Level Brightness value. Turn the small **MFD** knob to change the value and then the **ENT** key to save the selected value.

4 HAZARD AVOIDANCE

The G600 hazard avoidance features are designed to provide advisory information of potential hazards to flight safety associated with weather, terrain, and air traffic.

This section is divided into the following groups:

Terrain Avoidance

- Terrain

Traffic Avoidance

- Traffic Advisory System (Optional)
- Traffic Information Service (TIS) (Optional - GTX 33/330 Transponder required)

Weather

- GDL 69/69A XM® Satellite Weather

4.1 Terrain

During power-up of the GDU 620, the terrain/obstacle database versions are displayed along with a disclaimer. At the same time, the Terrain system self-test begins. A failure message is issued if the terrain test fails.

Garmin TERRAIN is a non-TSO-C151b-certified terrain awareness system provided as a standard feature of GDU 620 to increase situational awareness and help reduce controlled flight into terrain (CFIT). Terrain may be displayed on the Map page group Navigation Map and Terrain pages.

TERRAIN requires the following to operate properly:

- The system must have a valid 3-D GPS position solution.
- The system must have a valid terrain/obstacle/airport terrain database.

4.1.1 Displaying Terrain

The Terrain page is in the Map page group. Terrain is also selectable on the Navigation Map pages.

1) Turn the Large **MFD** knob to the MAP page group.
2) Turn the small **MFD** knob to the Terrain page.

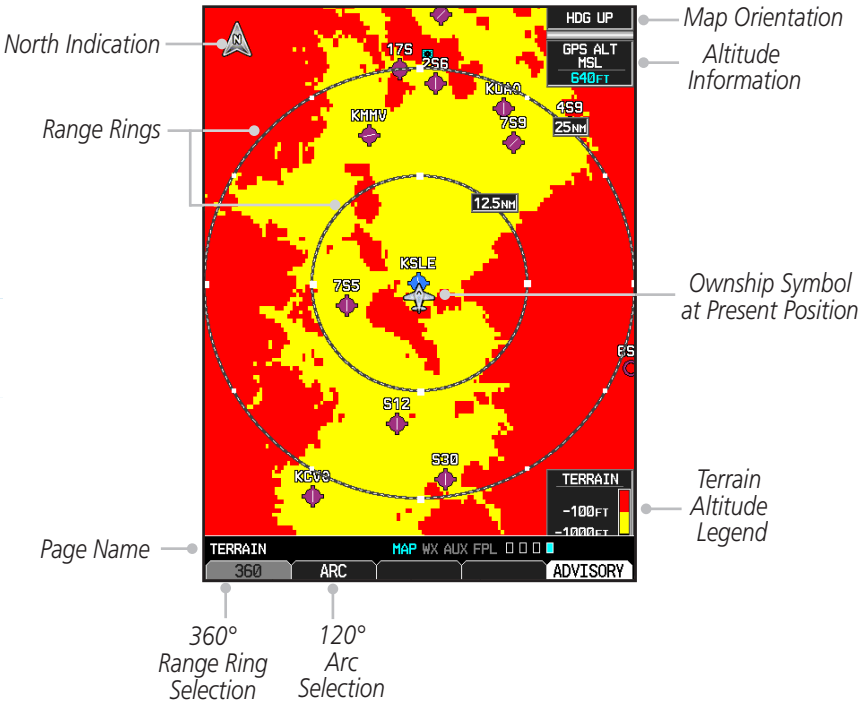


Figure 4-1 Terrain Page with Aviation Data Displayed and 360° View

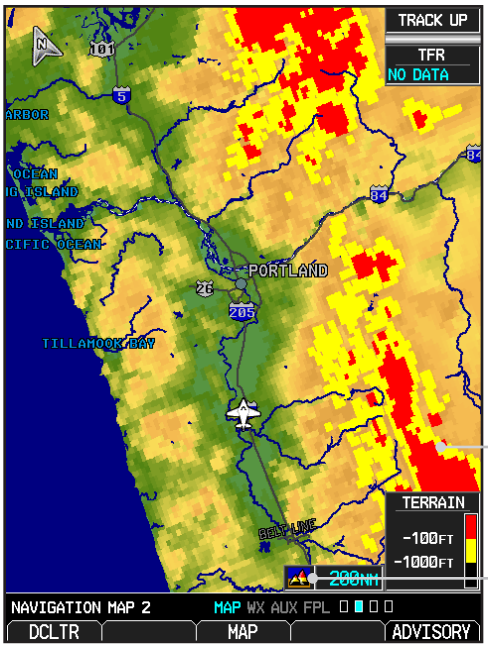


Figure 4-2 Terrain on Navigation Map Page

4.1.1.1 Terrain Page 120° Arc or 360° Rings

Select the 120° Arc or 360° rings overlay for the Terrain page with either the 360/Arc soft keys or from the Page Menu.

Press the **360** or **Arc** soft key.

Or

Press **MENU** and the with the View Arc or View 360° selection highlighted press **ENT**.

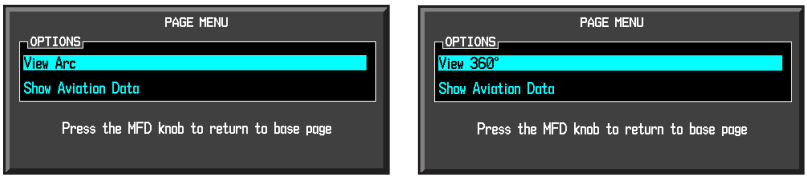


Figure 4-3 Terrain Page Menu Viewing Selections

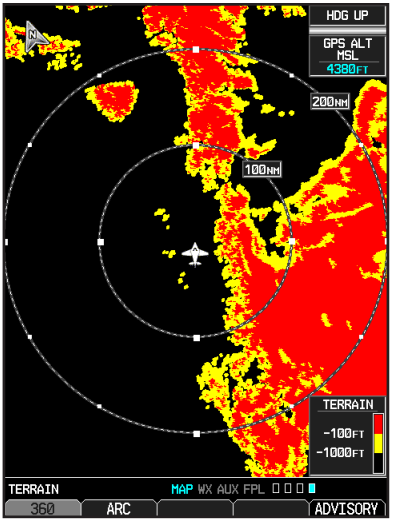


Figure 4-3 Terrain Page with 360° Rings

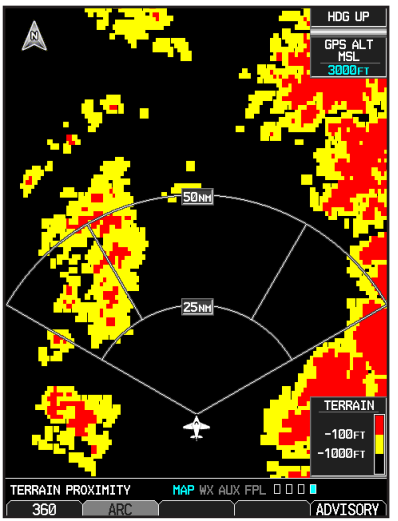


Figure 4-4 Terrain Page with 120° Arc

4.1.1.2 Terrain Page Aviation Data

Select the display of Aviation data on the Terrain page. The Page Menu selections allow you to hide or show aviation data overlay on the Terrain or the Map Setup options for the Navigation Map pages.

1) While viewing the Terrain page of the MAP page group, press **MENU** for Map selections to hide or show aviation data overlay on the Terrain or the Map Setup options for the Navigation Map pages.

Figure 4-5 Show/Hide Aviation Data on the Terrain Page

2) Press **ENT** to save the highlighted value.

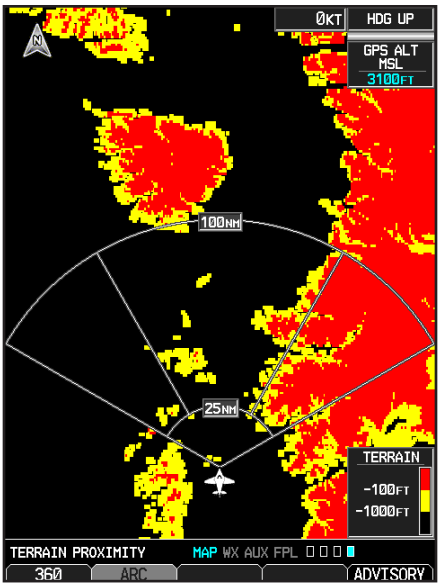


Figure 4-6 Terrain Page with Aviation Data Displayed and 120° Arc View

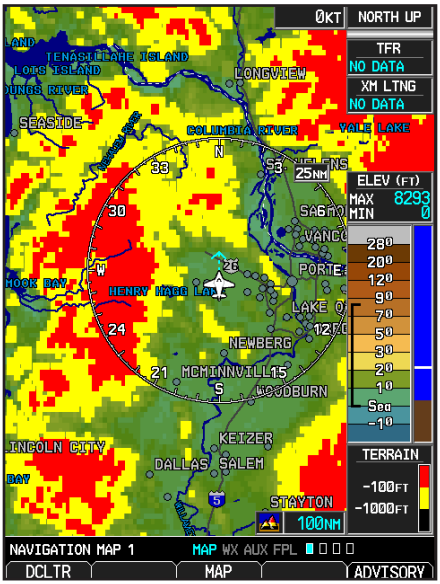


Figure 4-7 Navigation Map Page with Terrain Data Displayed

4.1.2 Terrain Alerts

TERRAIN uses information provided from the GPS receiver to provide a horizontal position and altitude. GPS altitude is derived from satellite measurements. GPS altitude is converted to a mean sea level (MSL)-based altitude (GPS-MSL altitude) and is used to determine TERRAIN alerts. GPS-MSL altitude accuracy is affected by factors such as satellite geometry, but it is not subject to variations in pressure and temperature that normally affect pressure altitude devices. GPS-MSL altitude does not require local altimeter settings to determine MSL altitude. Therefore, GPS altitude provides a highly accurate and reliable MSL altitude source to calculate terrain and obstacle alerts.

TERRAIN utilizes terrain and obstacle databases that are referenced to mean sea level (MSL). Using the GPS position and GPS-MSL altitude, TERRAIN displays a 2-D picture of the surrounding terrain and obstacles relative to the position and altitude of the aircraft. Furthermore, the GPS position and GPS-MSL altitude are used to calculate and "predict" the aircraft's flight path in relation to the surrounding terrain and obstacles. In this manner, TERRAIN can provide advanced alerts of predicted dangerous terrain conditions. Detailed alert modes are described in Section 6.

A TAWS warning received from the GNS 500W Series TAWS units will be displayed above the Altitude Tape. A new warning will flash for approximately five seconds.

TAWS Annunciation	Description
TER INHB	TERRAIN has been inhibited by flight crew
TER N/A	TAWS not available
TERRAIN	Excessive Descent Rate Caution
PULL UP	Excessive Descent Rate Warning
TERRAIN	Forward Looking Terrain Avoidance Caution for Terrain
PULL UP	Forward Looking Terrain Avoidance Warning for Terrain
TERRAIN	Forward Looking Terrain Avoidance Caution for Obstacle
PULL UP	Forward Looking Terrain Avoidance Warning for Obstacle

TAWS Annunciation	Description
TERRAIN	Premature Descent Alert Caution
TERRAIN	Negative Climb Rate Caution

NOTE: *TAWS Caution Alerts are displayed as black text on a yellow background; TAWS Warning Alerts are displayed as white text on a red background.*

4.1.3 Limitations

TERRAIN displays terrain and obstructions relative to the altitude of the aircraft. The displayed alerts are advisory in nature only. Individual obstructions may be shown if available in the database. However, all obstructions may not be available in the database and data may be inaccurate. Never use this information for navigation or to maneuver to avoid obstacles.

Terrain information is based on terrain elevation information in a database that may contain inaccuracies. Terrain information should be used as an aid to situational awareness. Never use it for navigation or to maneuver to avoid terrain.

TERRAIN uses terrain and obstacle information supplied by government sources. The displayed information should never be understood as being all-inclusive.

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

4.1.4 System Status

The TERRAIN system continually monitors several system-critical items, such as database validity, hardware status, and GPS status. Should the system detect a failure, a message is annunciated "TERRAIN has failed."

4.2 TAS Traffic (Optional)

NOTE: *TIS is disabled when Traffic Advisory System (TAS) is installed.*

Refer to the appropriate Traffic Advisory System's Pilot's Guides for a detailed discussion of the respective traffic advisory system.

The type of traffic systems that is installed is determined by the Traffic Page soft keys.

NOTE: *Aircraft without an operating transponder are invisible to both Traffic Advisory Systems (TAS) and TIS. Aircraft without altitude reporting capability are shown without altitude separation data or climb descent indication.*

- If Traffic Information Service (TIS) is configured, a **STANDBY**, **OPERATE**, and **TNA MUTE** soft key will be displayed.
- If a Traffic Advisory System (TAS) is configured, a **STANDBY**, **OPERATE**, **TEST**, and **ALT MODE** soft key will be displayed.

4.2.1 Displaying and Operating Traffic (TAS Systems)

The unit must be in operating mode for traffic to be displayed. The ability to switch from standby to operating mode on the ground is especially useful for scanning the airspace around the airport before takeoff.

4.2.1.1 Switching from Standby Mode to Operating Mode

1) While viewing the Traffic Page of the MAP page group, select the **OPERATE** soft key or press the **MENU** key and turn the small **MFD** knob to select Operating Mode.
2) To switch to Standby Mode from the Traffic Page, select the **STANDBY** soft key.
3) Select the **ALT MODE** soft key to change the altitude volume.
4) Select the **STANDBY** soft key to place the system in the Standby mode. STANDBY is displayed in the Traffic mode field.

NOTE: *Not all TAS systems can be set to "Standby" mode while in the air.*

The Traffic Map Page shows surrounding TAS traffic data in relation to the aircraft's current position and altitude without basemap clutter. Aircraft orientation is always heading up unless no valid heading is received. The traffic mode and altitude display mode are annunciated in the upper left corner.

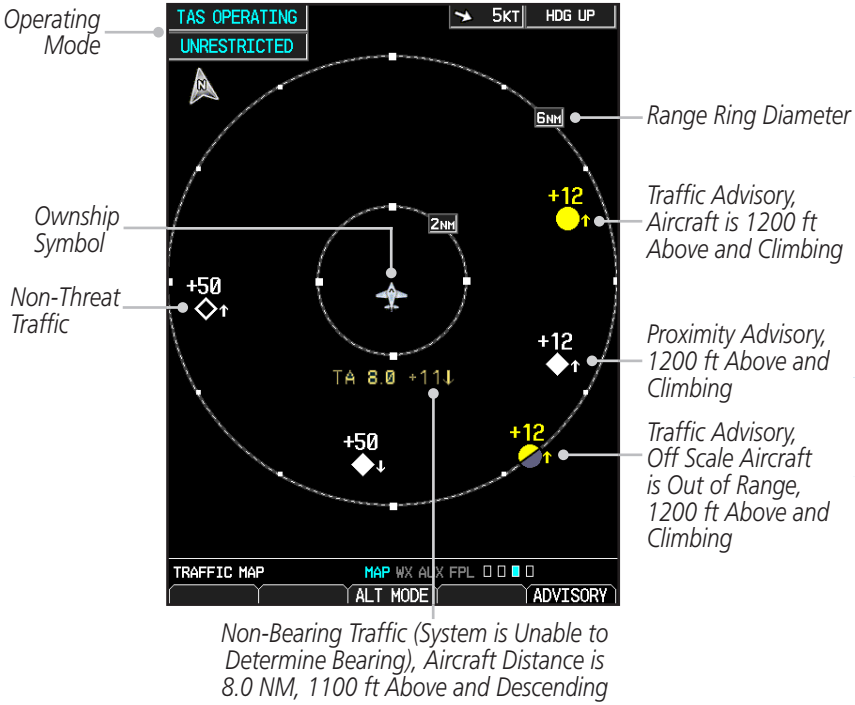


Figure 4-8 Traffic Map Page - TAS

4.2.1.2 Range Ring

Pressing the **RNG** keys will zoom in and out in preset steps depending on the installed equipment as shown in the following table.

Traffic Device	Map Ranges
Skywatch (SKY497/SKY889)	2 NM, 6 NM, 12 NM
Honeywell KTA 810, KTA 910, KMH 820, and KMH 920	2 NM, 6 NM, 12 NM, 24 NM, 40 NM

Table 4-1 Available Traffic Range Ring Steps

4.2.2 Altitude Display

4.2.2.1 Changing the altitude display mode:

1) While viewing the Traffic page of the MAP page group, press the **OPERATE** soft key to begin displaying traffic. "TAS OPERATING" is displayed in the Traffic mode field.

2) Press the **ALT MODE** soft key to change the altitude volume. Select the desired altitude volume by pressing the **BELOW**, **NORMAL**, **ABOVE**, or **UNREST** (unrestricted) soft keys. The selection is displayed in the Altitude mode field.

Altitude Mode	Displayed Traffic Range
Below	-9700 ft to 2700 ft
Normal	-2700 ft to 2700 ft
Above	-2700 ft to 9700 ft
Unrestricted	All Traffic Shown

Table 4-2 Displayed Traffic Range

3) Press the **STANDBY** soft key to place the system in the Standby mode.

Or

1) Press the **MENU** key.

2) Turn the small **MFD** knob to select one of the following:

- BELOW
- NORMAL
- ABOVE
- UNREST (unrestricted)

3) Select the **ENT** key.

4.2.3 TAS Symbology

Traffic Advisory System (TAS) is designed to help in detection and avoidance of other aircraft. TAS uses an on-board interrogator-processor to detect traffic. Only aircraft with operating transponders will be detected. Traffic is displayed according to TCAS symbology using four different symbols.

TAS Symbol	Description
	Non-Threat Traffic (intruder is beyond 5 NM and greater than 1200 ft vertical separation)
	Proximity Advisory (PA) (intruder is within 5 NM and less than 1200 ft vertical separation)
	Traffic Advisory (TA) (closing rate, distance, and vertical separation meet TA criteria)
	Traffic Advisory Off Scale

Table 4-3 Traffic Symbol Description

A Non-Threat Advisory, shown as an open white diamond, indicates that an intruding aircraft is at greater than ±1200 feet relative altitude or the distance is beyond 5 NM.

A Proximity Advisory indicates that the intruding aircraft is within ±1200 feet and is within 5 NM range, but is still not considered a threat.

A Traffic Advisory (TA) alerts the crew to a potentially hazardous intruding aircraft. Closing rate, distance, and vertical separation meet TA criteria. A Traffic Advisory that is beyond the selected display range is indicated by a half TA symbol at the edge of the screen at the relative bearing of the intruder.

4.2.4 Traffic System Status

NOTE: *Refer to the equipment documentation for information on the self-test and operating modes.*

The traffic mode is indicated in the upper left corner of the Traffic Map Page.

Mode	Traffic Mode Annunciation (Traffic Map Page)	Traffic Display Enabled Icon (Other Maps)
TAS Self-test Initiated	TEST	
TAS Operating	OPERATING	
TAS Standby	STANDBY (also shown in white in center of page)	
TAS Failed*	FAIL	

Table 4-4 TAS Modes

If the unit fails, an annunciation as to the cause of the failure is shown in the center of the Traffic Map Page.

Traffic Map Page Annunciation	Description
NO DATA	Data is not being received from the TAS unit
DATA FAILED	Data is being received from the TAS unit, but the unit is self-reporting a failure
FAILED	Incorrect data format received from the TAS unit

Table 4-5 TAS Failure Annunciations

The annunciations to indicate the status of traffic information appear in a banner at the lower left corner of maps on which traffic can be displayed.

Traffic Status Banner Annunciation	Description
TA OFF SCALE*	A Traffic Advisory is outside the selected display range Annunciation is removed when traffic comes within the selected display range
TA X.X ± XX ↕**	System cannot determine bearing of Traffic Advisory Annunciation indicates distance in NM, altitude separation in hundreds of feet, and altitude trend arrow (climbing/descending)
TRFC FAIL	TAS unit has failed (unit is self-reporting a failure or sending incorrectly formatted data)
NO TRFC DATA	Data is not being received from the TAS unit

**Shown as symbol on Traffic Map Page*
***Shown in center of Traffic Map Page*

Table 4-6 TAS Traffic Status Annunciations

4.2.5 Traffic Pop-Up

When the GDU 620 MFD is displaying any page (other than the NAV Traffic page) and a traffic threat is imminent, the Traffic Warning page will be displayed.

Press ENT to go directly to the Traffic page.

Or

Press CLR to return to the previously viewed page.

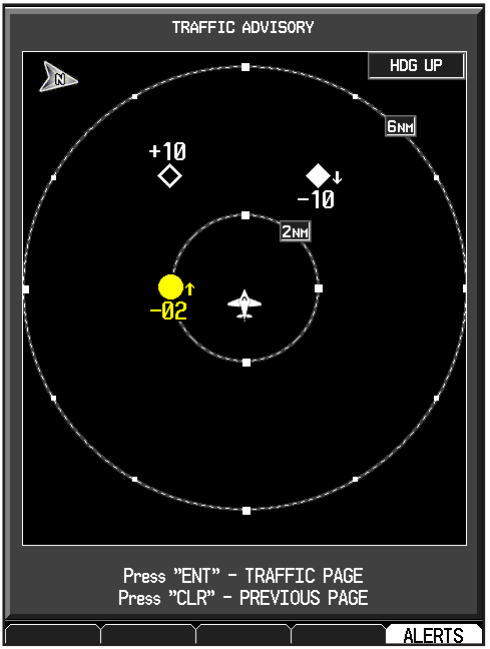


Figure 4-9 Traffic Pop-Up

4.3 TIS Traffic (Optional)

WARNING: *The Traffic Information Service (TIS) is intended for advisory use only. TIS is intended to help the pilot locate traffic visually. It is the responsibility of the pilot to see and maneuver to avoid traffic.*

NOTE: *TIS is available only when the aircraft is within the service volume of a TIS-capable terminal radar site. Aircraft without an operating transponder are invisible to both Traffic Advisory Systems (TAS) and TIS. Aircraft without altitude reporting capability are shown without altitude separation data or climb descent indication.*

NOTE: *TIS is disabled when a Traffic Advisory System (TAS) is installed.*

The type of traffic systems that is installed is determined by the traffic page soft keys.

Traffic Information Service (TIS) is designed to help in detection and avoidance of other aircraft. TIS uses the Mode S transponder for the traffic data link. TIS receives traffic information from ground stations, and is updated every five seconds. The GDU 620 displays up to eight traffic targets within a 7.5-NM radius, from 3000 feet below to 3500 feet above the requesting aircraft. Traffic is displayed according to TCAS symbology using three different symbols.

4.3.1 Traffic Map Page

The Traffic Map Page is configured to show surrounding TIS traffic data in relation to the aircraft's current position and altitude, without clutter from the basemap. Aircraft orientation on this map is always heading up unless there is no valid heading.

The traffic mode is annunciated in the upper left corner of the Traffic Map Page. When the aircraft is on the ground, TIS automatically enters Standby Mode. Once the aircraft is airborne, TIS switches from Standby to Operating Mode and the GDU 620 begins to display traffic information.

Refer to the System Status section in the Aux page group for more information.

4.3.1.1 Displaying traffic on the Traffic Map Page

1) Turn the large **MFD** knob to select the Map Page Group.
2) Turn the small **MFD** knob to select the Traffic Map Page.
3) Confirm TIS is in Operating Mode:

   Select the **OPERATE** soft key to begin displaying traffic.

   Or

1) Press the **MENU** Key.
2) Select Operate Mode (shown if TIS is in Standby Mode) and then press the **ENT** key.

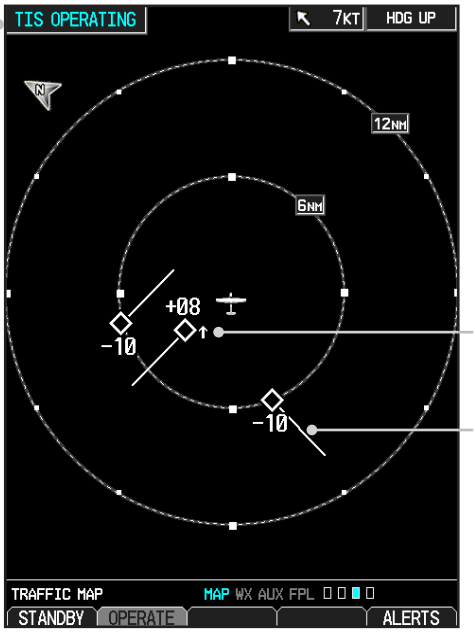


Figure 4-10 Traffic Map Page - TIS

4.3.2 TIS Symbology

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

Table 4-7 TIS Traffic Symbols

A Non-threat Advisory, shown as an open white diamond, indicates that an intruding aircraft is at greater than ±1200 feet relative altitude or the distance is beyond 5 NM.

A Traffic Advisory (TA) alerts the crew to a potentially hazardous intruding aircraft. Closing rate, distance, and vertical separation meet TA criteria. A Traffic Advisory that is beyond the selected display range is indicated by a half TA symbol at the edge of the screen at the relative bearing of the intruder.

TIS also provides a vector line showing the direction in which the traffic is moving, to the nearest 45°. Traffic information for which TIS is unable to determine the bearing (non-bearing traffic) is displayed in the center of the Traffic Map Page or in a banner at the lower left corner of maps other than the Traffic Map Page on which traffic can be displayed.

The altitude difference between the requesting aircraft and other intruder aircraft is displayed above/below the traffic symbol in hundreds of feet. If the other aircraft is above the requesting aircraft, the altitude separation appears above the traffic symbol; if below, the altitude separation appears below. Altitude trend is displayed as an up/down arrow (for speeds greater than 500 fpm in either direction) to the right of the target symbol. Traffic symbols for aircraft without altitude reporting capability appear without altitude separation or climb/descent information.

4.3.3 TIS Limitations

NOTE: *This section on TIS Limitations is not comprehensive. Garmin recommends the user review the TIS Limitations section of the Aeronautical Information Manual, Section 1-3-5.*

TIS is NOT intended to be used as a collision avoidance system and does not relieve the pilot of responsibility to "see and avoid" other aircraft. TIS should not be used for avoidance maneuvers during IMC or other times when there is no visual contact with the intruder aircraft. TIS is intended only to assist in visual acquisition of other aircraft in VMC. No recommended avoidance maneuvers are provided for, nor authorized, as a direct result of a TIS intruder display or TIS advisory.

While TIS is a useful aid to visual traffic avoidance, it has some system limitations that must be fully understood to ensure proper use. Many of these limitations are inherent in secondary radar surveillance. In other words, the information provided by TIS will be no better than that provided to ATC. TIS will only display aircraft with operating transponders installed.

TIS relies on surveillance of the Mode S radar, which is a "secondary surveillance" radar similar to the ATCRBS. TIS operation may be intermittent during turns or other maneuvering. TIS is dependent on two-way, "line-of-sight" communication between the aircraft and the Mode S radar. Whenever the structure of the client aircraft comes between the transponder antenna (usually located on the underside of the aircraft) and the ground-based radar antenna, the signal may be temporarily interrupted. Other limitations and anomalies associated with TIS are described in the AIM, Section 1-3-5.

Garmin is not responsible for Mode S geographical coverage. Operation of the ground stations is the responsibility of the FAA. Refer to the Aeronautical Information Manual for a Terminal Mode S Radar Site Map covering the U.S.

NOTE: *TIS will be unavailable at low altitudes in many areas of the U.S., particularly in mountainous regions. Also, when flying near the "floor" of radar coverage in a particular area, intruders below the client aircraft may not be detected by TIS.*

TIS information is collected one radar scan prior to the scan during which the uplink occurs. Therefore, the surveillance information is approximately five seconds old. In order to present the intruders in a "real time" position, the TIS ground station uses a "predictive algorithm" in its tracking software. This algorithm uses track history data to extrapolate intruders to their expected positions consistent with the time of display in the cockpit. Occasionally, aircraft maneuvering will cause this algorithm to induce errors in the display. These errors primarily affect relative bearing information and traffic target track vector (it will lag); intruder distance and altitude will remain relatively accurate and may be used to assist in "see and avoid." Some of the more common examples of these errors follow:

- When client or intruder aircraft maneuvers excessively or abruptly, the tracking algorithm may report incorrect horizontal position until the maneuvering aircraft stabilizes.
- When a rapidly closing intruder is on a course that crosses the client aircraft course at a shallow angle (either overtaking or head on) and either aircraft abruptly changes course within ¼ NM, TIS may display the intruder on the opposite side of the client than it actually is.

These are relatively rare occurrences and will be corrected in a few radar scans once the course has stabilized.

4.3.4 TIS Alerts

When the number of Traffic Advisories (TAs) on the Traffic Map Page increases from one scan to the next, the following occur:

- A single "Traffic" voice alert is generated.
- A TRAFFIC Annunciation appears to the top left of the Attitude Indicator on the PFD, flashing for 5 seconds and remaining displayed until no TAs are detected in the area.

To reduce the number of nuisance alerts due to proximate aircraft, the "Traffic" voice alert is generated only when the number of TAs increases. For example, when the first TA is displayed, a voice and visual annunciation are generated. As long as a single TA remains on the display, no additional voice alerts are generated. If a second TA appears on the display or if the number of TAs initially decreases and then subsequently increases, another voice alert is generated.

A "Traffic Not Available" (TNA) voice alert is generated when the TIS service becomes unavailable or is out of range. TIS may be unavailable in the radar coverage area due to the following:

- Radar site TIS Mode S sensor is not operational or is out of service
- Traffic or requesting aircraft is beyond the maximum range of the TIS-capable Mode S radar site.
- Traffic or requesting aircraft is above the radar site in the cone of silence and out of range of an adjacent site.
- Traffic or requesting aircraft is below radar coverage. In flat terrain, the coverage extends from about 3000 feet upward at 55 miles. Terrain and obstacles around the radar site can further decrease radar coverage in all directions.
- Traffic does not have an operating transponder.

4.3.5 TIS System Status

The GDU 620 performs an automatic test of TIS during power-up. If TIS passes the test, TIS enters Standby Mode on the ground or Operating Mode in the air. If TIS fails the power up test, an annunciation is shown in the center of the Traffic Map Page.

Traffic Map Page Annunciation	Description
NO DATA*	Data is not being received from the transponder
DATA FAILED*	Data is being received from the transponder, but a failure is detected in the data stream
FAILED*	The transponder has failed
UNAVAILABLE	TIS is unavailable or out of range

** Contact a service center or Garmin dealer for corrective action*

Table 4-8 TIS Failure Annunciations

The traffic mode is annunciated in the upper left corner of the Traffic Map Page. When the aircraft is on the ground, TIS automatically enters Standby Mode. If traffic is selected for display on another map while Standby Mode is selected, the traffic display enabled icon is crossed out (also the case when TIS has failed). Once the aircraft is airborne, TIS switches to Operating Mode and traffic information is displayed. The mode can be changed manually using soft keys or the page menu.

Mode	Traffic Mode Annunciation (Traffic Map Page)	Traffic Display Enabled Icon (Other Maps)
TIS Operating	OPERATING	
TIS Standby	STANDBY (Also shown in white in center of page)	
TIS Failed*	FAIL	

Table 4-9 TIS Modes

4.3.5.1 Switching Between TIS Operating Modes

1) Turn the large **MFD** knob to the MAP page group and then turn the small **MFD** knob to the Traffic Map Page.
2) Select the **STANDBY** or **OPERATE** soft key to switch between modes. The mode is displayed in the upper left corner of the Traffic Map Page.

Or

1) Press the **MENU** key.
2) Select Operate mode or Standby mode whether airborne or on the ground.
3) Press the **ENT** key.

The annunciations indicate the status of traffic information appear in a banner at the lower left corner of maps on which traffic can be displayed.

Traffic Status Banner Annunciation	Description
TA OFF SCALE*	A Traffic Advisory is outside the selected display range Annunciation is removed when traffic comes within the selected display range
TA X.X ± XX ↕**	System cannot determine bearing of Traffic Advisory Annunciation indicates distance in NM, altitude separation in hundreds of feet, and altitude trend arrow (climbing/descending)
AGE MM:SS	Appears if traffic data is not refreshed within 6 seconds If after another 6 seconds data is not received, traffic is removed from the display The quality of displayed traffic information is reduced as the age increases
TRFC COAST	The displayed data is not current (6 to 12 seconds since last message) The quality of displayed traffic information is reduced when this message is displayed
TRFC RMVD	Traffic is removed because it is too old for coasting (12 to 60 seconds since last message) Traffic may exist within the selected display range, but it is not displayed
TRFC FAIL	Traffic data has failed
NO TRFC DATA	Traffic has not been detected
TRFC UNAVAIL	The traffic service is unavailable or out of range

**Shown as symbol on Traffic Map Page*
***Shown in center of Traffic Map Page*

Table 4-10 TIS Traffic Status Annunciations

4.4 XM Weather (Optional)

The primary map for viewing XM Weather data are the Weather Data Link Pages in the Map Page Group. These are the only GDU 620 map displays capable of all available XM weather products. The Wx Weather pages are always oriented with North Up.

4.4.1 Using XM Satellite Weather Products

When a weather product is active on the Weather Data Link Page or the Navigation Map Page, the age of the data is displayed on the screen. The age of the product is based on the time difference between when the data was assembled on the ground and the current GPS time. Weather products are refreshed at specific intervals (defined in the Refresh Rate column.

If for any reason, a weather product is not refreshed within the 30-, 60-, or 90-minute Expiration Time intervals, the data is considered expired and is removed from the display. This ensures that the displayed data is consistent with what is currently being broadcast by XM Satellite Radio services. If more than half of the expiration time has elapsed from the time the data is received, the color of the product age displayed changes to yellow.

4.4.2 Customizing the XM Weather Map

Each Wx Data Link Map page may be customized individually. The Wx Data Link Map pages are customized by selecting options from the Page Menu. The Page Menu options include choices for Weather Setup and displaying the Weather Legends. The Weather Setup choice covers selections for adjusting the viewing ranges of the weather products.

1) While viewing a WX Data Link Map page of the WX page group, press the **MENU** key to display the Page Menu Options. The cursor flashes on the "Weather Setup" option. Press **ENT.**

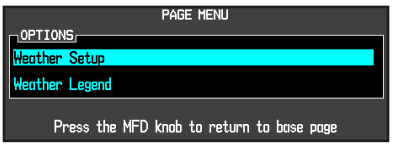


Figure 4-11 Weather Page Menu Options

2) With the Data Link Setup Menu displayed, turn the Large **MFD** knob to select the desired item and press **ENT**.

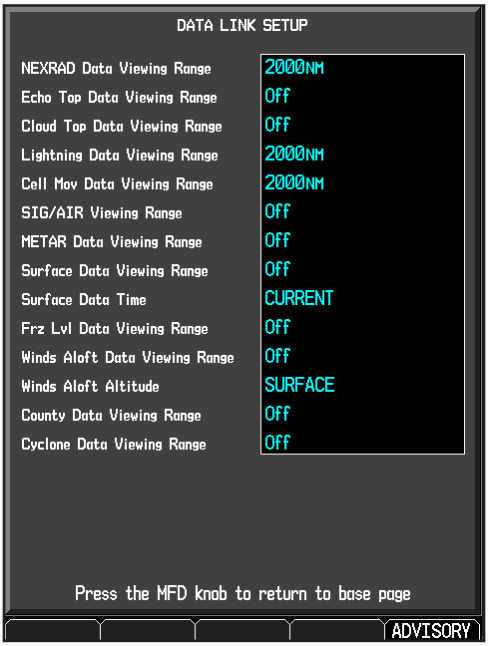


Figure 4-12 Weather Data Link Setup Menu Options

3) Turn the small **MFD** knob to select the desired weather feature option.

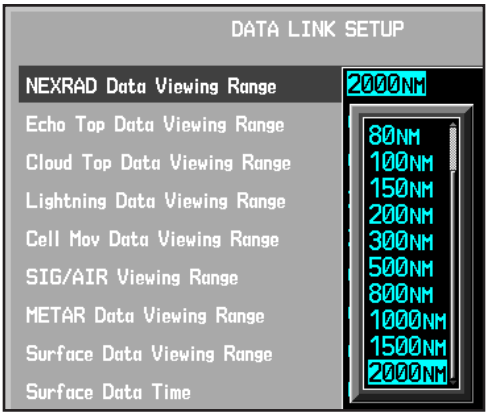


Figure 4-13 Weather Data Link Setup Menu Option Selection

4) Press **ENT** to save a selection.

5) Turn the large **MFD** knob to the next desired option or press the small **MFD** knob to cancel and return to the XM Weather Data Link Map Page.

WX Page Menu - Weather Setup	
Menu Item	**Adjustment**
NEXRAD Data	Off, 50 NM to 2000 NM
Echo Top Data	Off, 50 NM to 2000 NM
Cloud Top Data	Off, 50 NM to 2000 NM
Ltng Data	Off, 50 NM to 2000 NM
Cell Mov Data	Off, 50 NM to 2000 NM
SIG/Air	Off, 50 NM to 2000 NM
METAR Data	Off, 50 NM to 2000 NM
SFC Data	Off, 50 NM to 2000 NM
SFC Time	Current, 12 Hr, 24 Hr, 36 Hr, and 48 Hr
Frz Lvl Data	Off, 50 NM to 2000 NM
Wnd Alf Data	Off, 50 NM to 2000 NM
Wnd Alf Alt	Surface, 3000 feet to 42000 feet
County Data	Off, 50 NM to 2000 NM

Table 4-11 Weather Page Menu Setup Options

4.4.3 XM Weather Symbols and Product Age

This table shows the weather product symbols, the expiration time and the refresh rate. The refresh rate represents the interval at which XM Satellite Radio broadcasts new signals that may or may not contain new weather data. It does not represent the rate at which weather data is updated or new content is received by the Data Link Receiver. Weather data is refreshed at intervals that are defined and controlled by XM Satellite Radio and its data vendors.

Symbol	Weather Product	Expiration Time (Minutes)	Refresh Rate (Minutes)
	NEXRAD (NEXRAD and Echo Top Mutually Exclusive)	30	5
	Echo Top (Cloud Top and Echo Top Mutually Exclusive) (NEXRAD and Echo Top Mutually Exclusive)	30	7.5
	Cloud Top (Cloud Top and Echo Top Mutually Exclusive)	60	15
	XM Lightning	30	5
	Cell movement	30	1.25
	SIGMETs / AIRMETs	60	12
	METARs	90	12
	City Forecast	90	12
	Surface Analysis	60	12
	Freezing Levels	120	12
	Winds Aloft	90	12
	County Warnings	60	5
	Cyclone Warnings	60	12

Symbol	Weather Product	Expiration Time (Minutes)	Refresh Rate (Minutes)
	Flood		
	Severe Thunderstorm		
	Tornado		
	Sunny		
	Part Sun		
	Cloudy		
	Rainy		
	T-Storm		
	Snow		
	Windy		
	Foggy		
	Haze		
	High/Low Temp		

Table 4-12 Weather Symbols and Aging Times

4.4.4 Weather Legends

The Legend soft key displays a pop-up legend of the currently used weather products. Pressing the **LEGEND** soft key again, the **MFD** knob, the **ENT**, or **CLR** keys will remove the legend.

1) A mini-legend is always displayed on a WX Data Link Map page for the applicable weather products.

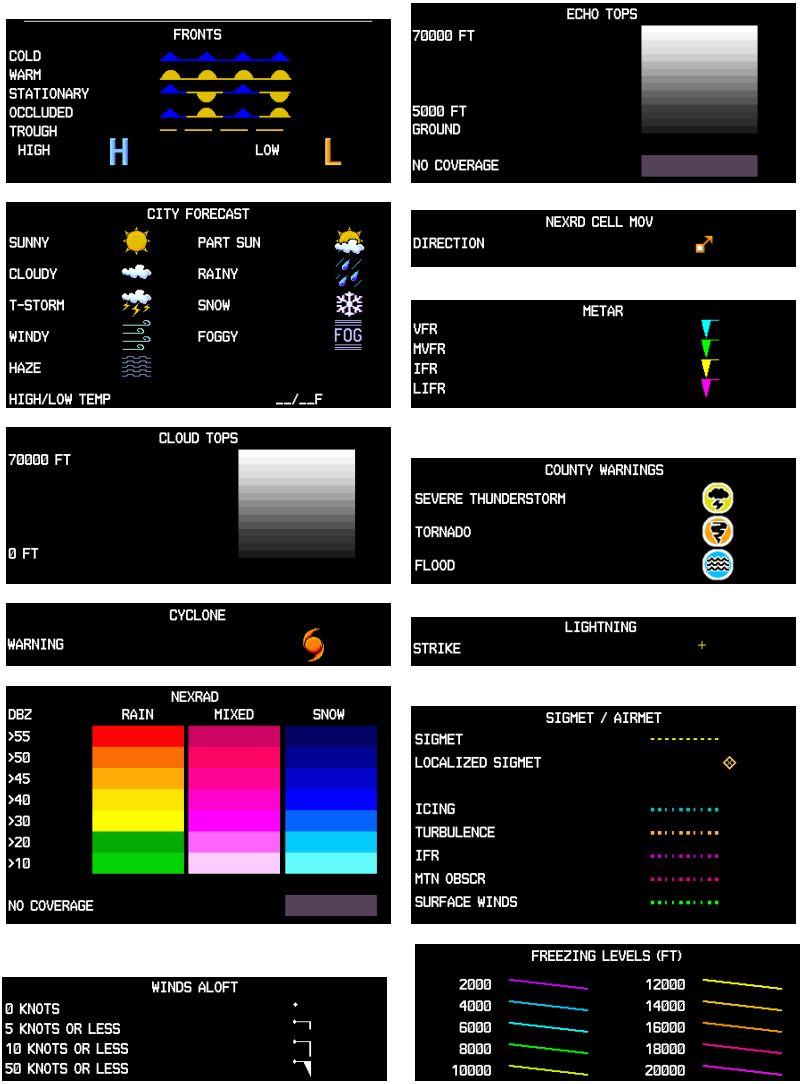


Figure 4-14 Weather Legends

2) A full page legend can be selected by selecting the Weather Legend option in the XM Weather Map Menu or pressing the **LEGEND** soft key on the Weather Map Page. The legend displayed will match the selected weather products. Turn the large or small **MFD** knobs to scroll through the legend, if necessary.

4.4.5 NEXRAD

WSR-88D, or NEXRAD (NEXt-generation RADar), is a network of 158 high-resolution Doppler radar systems that are operated by the National Weather Service (NWS). NEXRAD data provides centralized meteorological information for the continental United States and selected overseas locations. The maximum range of a single NEXRAD radar site is 250 NM. The NEXRAD network provides important information about severe weather for air traffic safety.

NEXRAD data is not real-time. The lapsed time between collection, processing, and dissemination of NEXRAD images can be significant and may not reflect the current radar synopsis. Due to the inherent delays and the relative age of the data, it should be used for long-range planning purposes only. Never use NEXRAD data or any radar data to penetrate hazardous weather. Instead, use it in an early-warning capacity of pre-departure and en route evaluation.

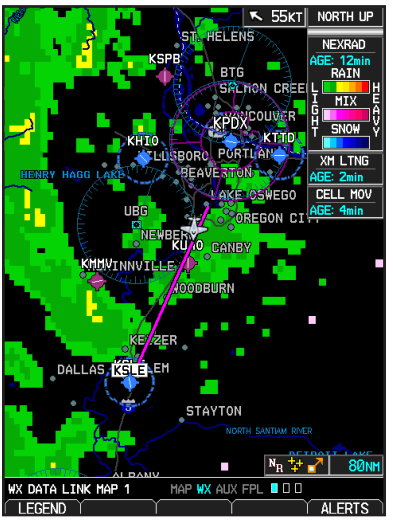


Figure 4-15 XM Weather - NEXRAD

Composite data from all the NEXRAD radar sites in the United States is shown. This data is composed of the maximum reflectivity from the individual radar sweeps. The display of the information is color-coded to indicate the weather

severity level. All weather product legends can be viewed on the Weather Data Link Page. For the NEXRAD legend, select the **LEGEND** soft key when NEXRAD is selected for display.

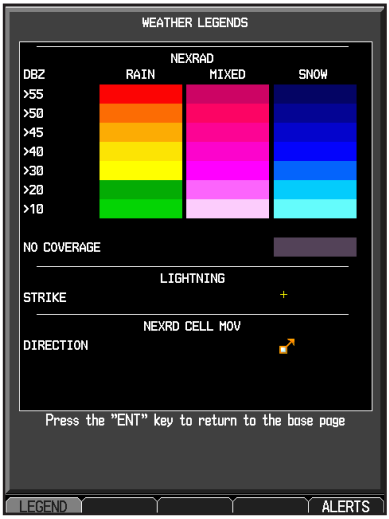


Figure 4-16 NEXRAD Weather Legend

The display of radar coverage is always active when either NEXRAD or ECHO TOPS is selected. Areas where NEXRAD radar coverage and Echo Tops information is not currently available or is not being collected are indicated in grayish-purple. Radar capability exists in these areas, but it is not active or is off-line.

4.4.5.1 Reflectivity

Reflectivity is the amount of transmitted power returned to the radar receiver. Colors on the NEXRAD display directly correlate to the level of detected reflectivity. Reflectivity as it relates to hazardous weather can be very complex.

The role of radar is essentially to detect moisture in the atmosphere. Simply put, certain types of weather reflect radar better than others. The intensity of a radar reflection is not necessarily an indication of the weather hazard level. For instance, wet hail returns a strong radar reflection, while dry hail does not. Both wet and dry hail can be extremely hazardous.

The different NEXRAD echo intensities are measured in decibels (dB) relative to reflectivity (Z). NEXRAD measures the radar reflectivity ratio, or the energy reflected back to the radar receiver (designated by the letter Z). The value of Z increases as the returned signal strength increases.

4.4.5.2 NEXRAD Limitations

NEXRAD radar images may have certain limitations:

- NEXRAD base reflectivity does not provide sufficient information to determine cloud layers or precipitation characteristics. For example, it is not possible to distinguish between wet snow, wet hail, and rain.
- NEXRAD base reflectivity is sampled at the minimum antenna elevation angle. An individual NEXRAD site cannot depict high altitude storms at close ranges. It has no information about storms directly over the site.
- When zoomed in to a range of 30 NM, each square block on the display represents an area of four square kilometers. The intensity level reflected by each square represents the highest level of NEXRAD data sampled within the area.

The following may cause abnormalities in displayed NEXRAD radar images:

- Ground clutter
- Strobes and spurious radar data
- Sun strobes (when the radar antenna points directly at the sun)
- Interference from buildings or mountains, which may cause shadows
- Metallic dust from military aircraft, which can cause alterations in radar scans

4.4.5.2 NEXRAD Data Viewing Range

The NEXRAD Viewing Range option allows you to select the map range where below that value NEXRAD weather products will be shown on the selected MFD Wx Data Link Map page (1, 2, or 3). When Off is selected, NEXRAD weather will not be shown.

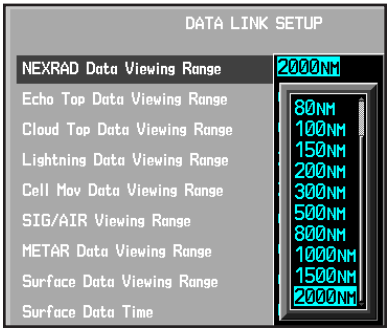


Figure 4-17 NEXRAD Viewing Range Selection

1) While viewing a WX Data Link Map page of the WX page group, press the **MENU** key to display the Page Menu Options. The cursor flashes on the "Weather Setup" option. Press **ENT.**
2) The NEXRAD Data Viewing Range value will be highlighted. Turn the small **MFD** knob to highlight the desired value.
3) Press **ENT** to accept the displayed value. The next option will be highlighted.
4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

4.4.6 Echo Tops

NOTE: *Due to similarities in color schemes, the display of Echo Tops is mutually exclusive with Cloud Tops and NEXRAD.*

Echo Tops data shows the location, elevation, and direction of the highest radar echo. The highest radar echo does not indicate the top of a storm or clouds; rather it indicates the highest altitude at which precipitation is detected. Information is derived from NEXRAD data.

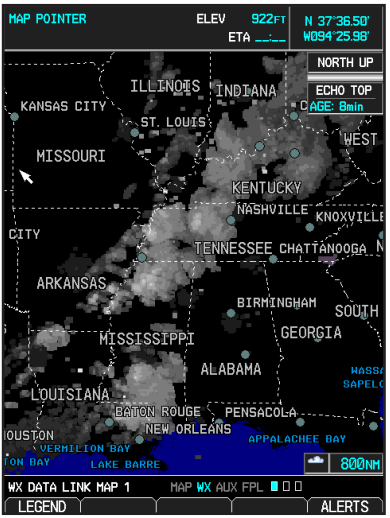


Figure 4-18 XM Weather - Echo Tops

The display of radar coverage is always active when either NEXRAD or ECHO TOPS is selected. Areas where NEXRAD radar coverage and Echo Tops information is not currently available or is not being collected are indicated in grayish-purple. Radar capability exists in these areas, but it is not active or is off-line.

Echo Top Data Viewing Range

The Echo Top Data Viewing Range option allows you to select the map range where below that value Echo Top weather products will be shown on the selected MFD Wx Data Link Map page (1, 2, or 3). When Off is selected, Echo Tops will not be shown.

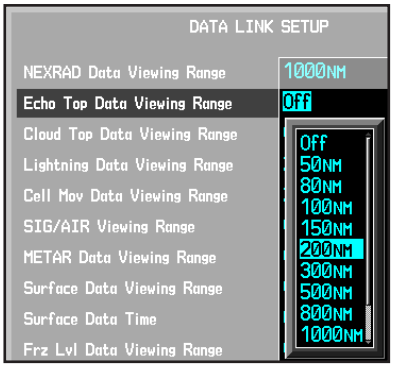


Figure 4-19 Echo Top Viewing Range Selection

1) While viewing a WX Data Link Map page of the WX page group, press the **MENU** key to display the Page Menu Options. The cursor flashes on the "Weather Setup" option. Press **ENT.**
2) Turn the large **MFD** knob to highlight the Echo Top Data Viewing Range value.
3) Turn the small **MFD** knob to highlight the desired value. Press **ENT** to accept the displayed value. The next option will be highlighted.
4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

4.4.7 Cloud Tops

NOTE: *Due to similarities in color schemes, the display of Cloud Tops is mutually exclusive with Echo Tops and NEXRAD.*

Cloud Tops data depicts cloud top altitudes as determined from satellite imagery.

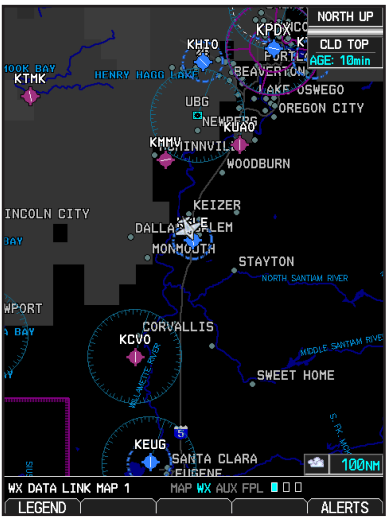


Figure 4-20 XM Weather - Cloud Tops

To display the Cloud Tops legend, select the **LEGEND** soft key when Cloud Tops is selected for display. Since Cloud Tops and Echo Tops use the same color scaling to represent altitude, display of these weather products is mutually exclusive. When Cloud Tops is activated, Echo Tops or NEXRAD data is not shown.

Cloud Top Data Viewing Range

The Cloud Top Data Viewing Range option allows you to select the map range where below that value Cloud Top weather products will be shown on the selected MFD Wx Data Link Map page (1, 2, or 3). When Off is selected, Cloud Tops will not be shown.

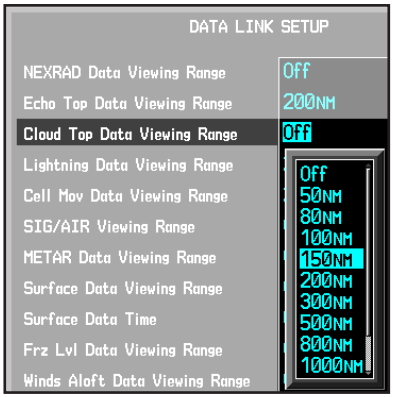


Figure 4-21 Cloud Top Viewing Range Selection

1) While viewing a WX Data Link Map page of the WX page group, press the **MENU** key to display the Page Menu Options. The cursor flashes on the "Weather Setup" option. Press **ENT.**
2) Turn the large **MFD** knob to highlight the Cloud Top Data Viewing Range value.
3) Turn the small **MFD** knob to highlight the desired value. Press **ENT** to accept the displayed value. The next option will be highlighted.
4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

4.4.8 XM Lightning

Lightning data shows the approximate location of cloud-to-ground lightning strikes. A strike icon represents a strike that has occurred within a two-kilometer region. The exact location of the lightning strike is not displayed.

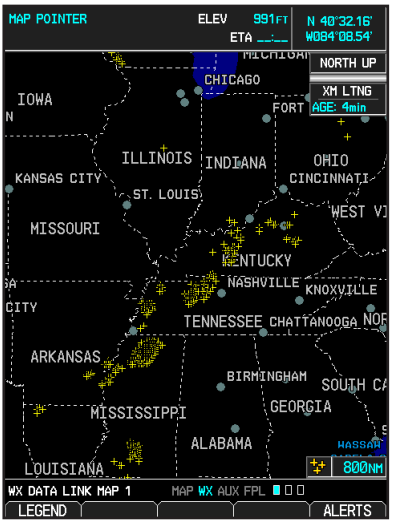


Figure 4-22 XM Weather - Lightning

Lightning Data Viewing Range

The Lightning Data Viewing Range option allows you to select the map range where below that value Lightning weather products will be shown on the selected MFD Wx Data Link Map page (1, 2, or 3). When Off is selected, Lightning will not be shown.

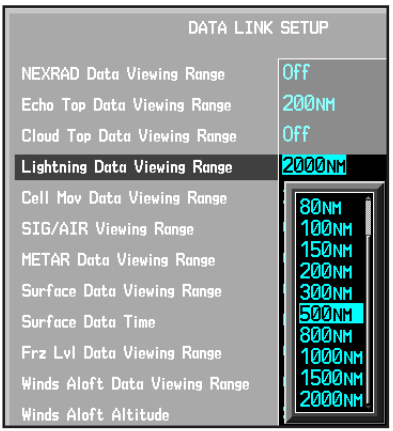


Figure 4-23 Lightning Viewing Range Selection

1) While viewing a WX Data Link Map page of the WX page group, press the **MENU** key to display the Page Menu Options. The cursor flashes on the "Weather Setup" option. Press **ENT.**

2) Turn the large **MFD** knob to highlight the Lightning Data Viewing Range value.

3) Turn the small **MFD** knob to highlight the desired value. Press **ENT** to accept the displayed value. The next option will be highlighted.

4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

4.4.9 Cell Movement

Cell Movement data shows the location and movement of storm cells as identified by a ground-based system. Cells are represented by yellow squares, with direction of movement indicated with short, orange arrows.

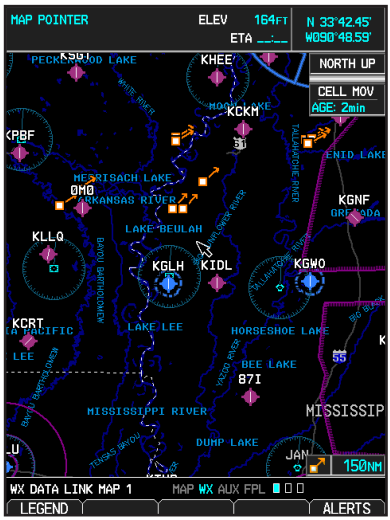


Figure 4-24 XM Weather - Cell Movement

On most applicable maps, Cell Movement data is selected for display along with NEXRAD. On the Weather Data Link Page, Cell Movement data can be selected independently.

Cell Movement Data Viewing Range

The Cell Movement Data Viewing Range option allows you to select the map range and below where Cell Movement weather products will appear on the selected MFD Wx Data Link Map page (1, 2, or 3). When Off is selected, Cell Movement will not be shown.

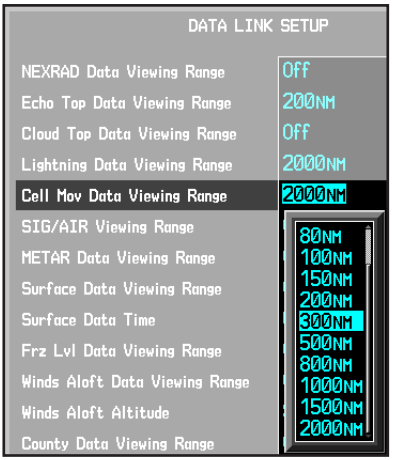


Figure 4-25 Cell Movement Viewing Range Selection

1) While viewing a WX Data Link Map page of the WX page group, press the **MENU** key to display the Page Menu Options. The cursor flashes on the "Weather Setup" option. Press **ENT.**
2) Turn the large **MFD** knob to highlight the Cell Movement Data Viewing Range value.
3) Turn the small **MFD** knob to highlight the desired value. Press **ENT** to accept the displayed value. The next option will be highlighted.
4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

4.4.10 SIGMETs and AIRMETs

SIGMETs (SIGnificant METeorological Information) and AIRMETs (AIRmen's METeorological Information) are broadcast for potentially hazardous weather considered of importance to aircraft. A Convective SIGMET is issued for hazardous convective weather. A localized SIGMET is a significant weather condition occurring at a localized geographical position.

When enabled, SIGMET/AIRMETs advise the pilot of potentially hazardous weather, other than convective activity, to all aircraft. The advisory covers an area of at least 3,000 square miles at any one time. SIGMET/AIRMET data covers icing, turbulence, dust, and volcanic ash as issued by the National Weather Service. The update rate is every 12 minutes.

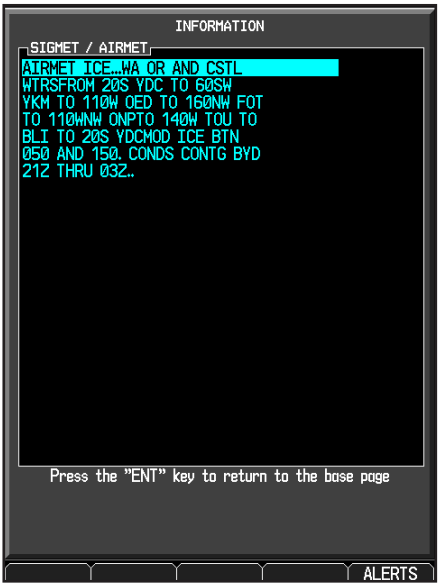


Figure 4-26 XM Weather - AIRMETs

When enabled, the following AIRMETs are available for display:

- Icing
- Turbulence
- IFR conditions
- Mountain obscuration
- Surface winds

SIGMET/AIRMET Viewing Range

The SIGMET/AIRMET Viewing Range option allows you to select the map range where below that value SIGMET/AIRMET products will be shown on the selected MFD Wx Data Link Map page (1, 2, or 3). When Off is selected, SIGMET/AIRMET will not be shown.

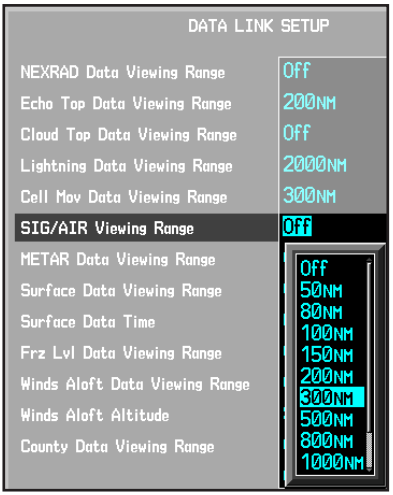


Figure 4-27 SIGMET/AIRMET Viewing Range Selection

1) While viewing a WX Data Link Map page of the WX page group, press the **MENU** key to display the Page Menu Options. The cursor flashes on the "Weather Setup" option. Press **ENT.**
2) Turn the large **MFD** knob to highlight the SIG/AIR Viewing Range value.
3) Turn the small **MFD** knob to highlight the desired value. Press **ENT** to accept the displayed value. The next option will be highlighted.
4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

4.4.11 METARs

NOTE: *Atmospheric pressure reported for METARs is given in hectopascals (hPa), except in the United States, where it is reported in inches of mercury (in Hg). Temperatures are reported in Celsius.*

NOTE: *METAR information is only displayed within the installed aviation database service area.*

METAR (METeorological Aerodrome Report), known as an Aviation Routine Weather Report, is the standard format for current weather observations. METARs are updated hourly and are considered current. METARs typically contain information about the temperature, dew point, wind, precipitation, cloud cover, cloud heights, visibility, and barometric pressure. They can also contain information on precipitation amounts, lightning, and other critical data. METARs are shown as colored flags at airports that provide them.

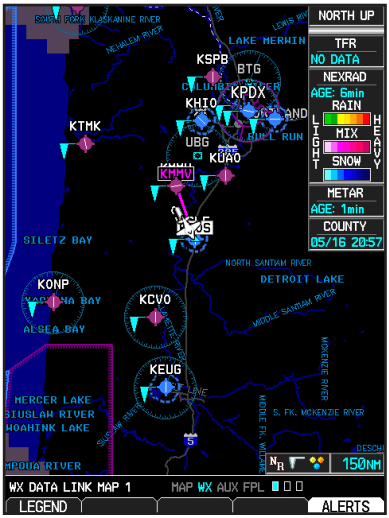


Figure 4-28 XM Weather - Graphic METARs

METAR Viewing Range

The METAR Viewing Range option allows you to select the map range where below that value METAR weather products will be shown on the selected MFD Wx Data Link Map page (1, 2, or 3). When Off is selected, METARs will not be shown.

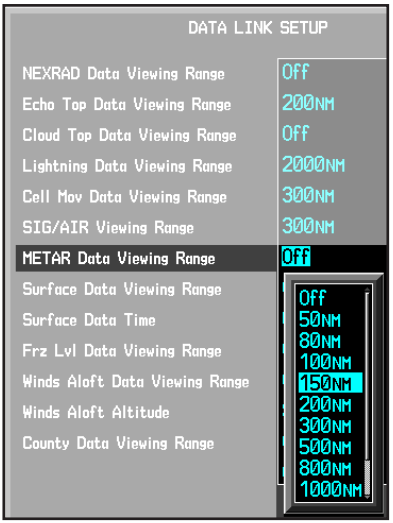


Figure 4-29 METAR Viewing Range Selection

1) While viewing a WX Data Link Map page of the WX page group, press the **MENU** key to display the Page Menu Options. The cursor flashes on the "Weather Setup" option. Press **ENT.**
2) Turn the large **MFD** knob to highlight the METAR Data Viewing Range value.
3) Turn the small **MFD** knob to highlight the desired value. Press **ENT** to accept the displayed value. The next option will be highlighted.
4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

4.4.12 Surface Analysis and City Forecast

NOTE: *Surface Analysis and City Forecast data are displayed only within the installed Aviation Database service area.*

Surface Analysis and City Forecast information is available for current and forecast weather conditions. Forecasts are available for intervals of 12, 24, 36, and 48 hours by pressing the **SRFC TIME** soft key or in the Page Menu Weather Setup options.

When enabled, the Surface Analysis forecast shows frontal lines indicating weather fronts and the direction they are moving. High and Low pressure centers are noted with a large H or L. The Forecast Time menu item will step through the intervals manually.

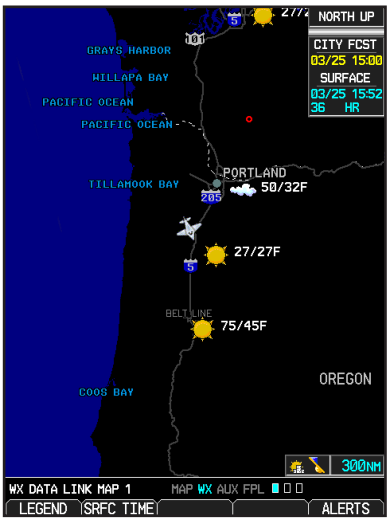


Figure 4-30 XM Weather - Surface Analysis and City Forecast

A Cold Front is a front where cold air replaces warm air. A blue line with blue triangles that point in the direction of the cold air flow.

Figure 4-31 XM Weather - Cold Front

A Warm Front is where warm air replaces cold air. An orange line with orange half moons that point in the direction of the warm air flow.

Figure 4-32 XM Weather - Warm Front

A Stationary Front is a front with very little horizontal movement. The line alternates with orange and blue sections which point in opposite directions to symbolize little movement.

Figure 4-33 XM Weather - Stationary Front

An Occluded Front is where a cold front has overtaken and merged with a warm front. The line alternates with the blue triangle and orange half moon symbols on the same side of the line pointing in the direction the front is moving.

Figure 4-34 XM Weather - Occluded Front

Surface Data Viewing Range

The Surface Data Viewing Range option allows you to select the map range where below that value Surface Data weather products will be shown on the selected MFD Wx Data Link Map page (1, 2, or 3). When Off is selected, Surface Data will not be shown.

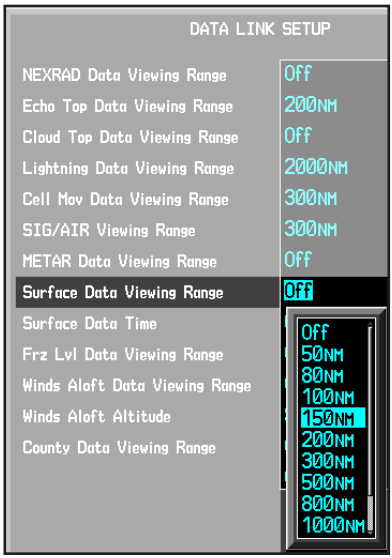


Figure 4-35 Surface data Viewing Range Selection

1) While viewing a WX Data Link Map page of the WX page group, press the **MENU** key to display the Page Menu Options. The cursor flashes on the "Weather Setup" option. Press **ENT.**

2) Turn the large **MFD** knob to highlight the Surface Data Viewing Range value.

3) Turn the small **MFD** knob to highlight the desired value. Press **ENT** to accept the displayed value. The next option will be highlighted.

4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

Surface Data Time

The Surface Data Time option allows you to select the forecast time when the Surface and City Forecast weather products will appear on the selected MFD Wx Data Link Map page (1, 2, or 3). Forecasts are available for intervals of current, 12, 24, 36, and 48 hours. You may also select an interval by pressing the **SRFC TIME** soft key on the Wx Data Link Map page.

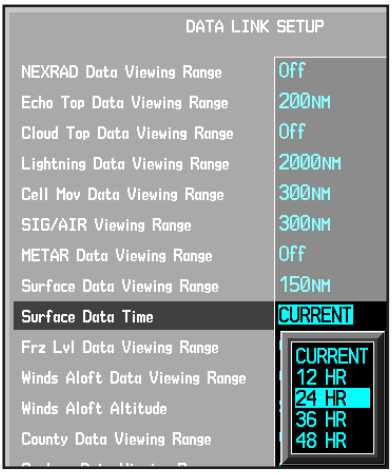


Figure 4-36 Surface Data Time Selection

1) While viewing a WX Data Link Map page of the WX page group, press the **MENU** key to display the Page Menu Options. The cursor flashes on the "Weather Setup" option. Press **ENT.**

2) Turn the large **MFD** knob to highlight the Surface Data Time value.

3) Turn the small **MFD** knob to highlight the desired value. Press **ENT** to accept the displayed value. The next option will be highlighted.

4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

4.4.13 Freezing Level

Freezing Level data shows the color-coded contour lines for the altitude and location at which the Freezing Level is found. When no data is displayed for a given altitude, the data for that altitude has not been received, or is out of date and has been removed from the display. New data appears at the next update.

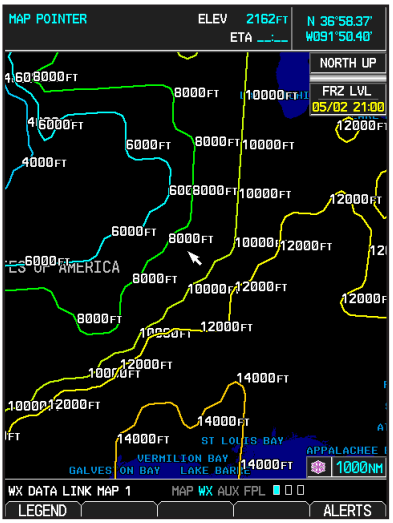


Figure 4-37 XM Weather - Freezing Levels

Freezing Level Viewing Range

The Freezing Level Viewing Range option allows you to select the map range where below that value Freezing Level weather products will be shown on the selected MFD Wx Data Link Map page (1, 2, or 3). When Off is selected, Freezing Level Data will not be shown.

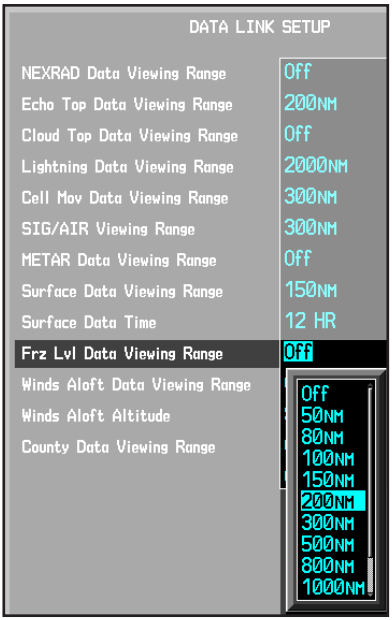


Figure 4-38 Freezing Level Viewing Range Selection

1) While viewing a WX Data Link Map page of the WX page group, press the **MENU** key to display the Page Menu Options. The cursor flashes on the "Weather Setup" option. Press **ENT.**
2) Turn the large **MFD** knob to highlight the Frz Lvl Viewing Range value.
3) Turn the small **MFD** knob to highlight the desired value. Press **ENT** to accept the displayed value. The next option will be highlighted.
4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

4.4.14 Winds Aloft

Winds Aloft data shows the forecast wind speed and direction at the surface and at selected altitudes. Altitudes can be selected in 3000 foot increments from the surface up to 42,000 feet MSL. Pressing the **WIND DOWN** or **WIND UP** soft keys steps down or up in 3,000 foot increments.

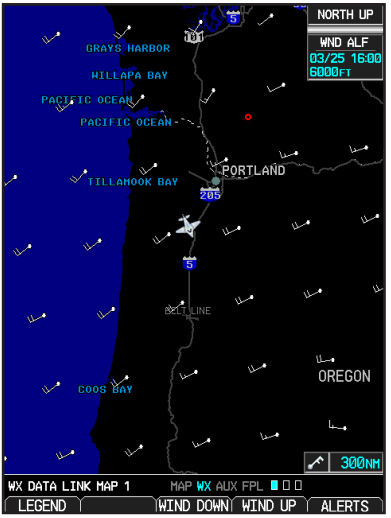


Figure 4-39 XM Weather - Winds Aloft

Figure 4-40 XM Weather - Winds Aloft Legend

Winds Aloft Data Viewing Range

The Winds Aloft Data Viewing Range option allows you to select the map range where below that value Winds Aloft weather products will appear on the selected MFD Wx Data Link Map page (1, 2, or 3). When Off is selected, Winds Aloft will not be shown.

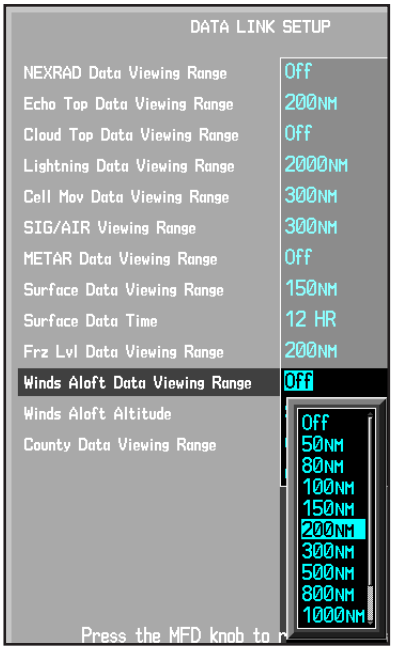


Figure 4-41 Winds Aloft Data Viewing Range Selection

1) While viewing a WX Data Link Map page of the WX page group, press the **MENU** key to display the Page Menu Options. The cursor flashes on the "Weather Setup" option. Press **ENT.**
2) Turn the large **MFD** knob to highlight the Winds Aloft Data Viewing Range value.
3) Turn the small **MFD** knob to highlight the desired value. Press **ENT** to accept the displayed value. The next option will be highlighted.
4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

Winds Aloft Altitude

The Winds Aloft Altitude option allows you to select the altitude where below that value Winds Aloft weather products will be shown on the selected MFD Wx Data Link Map page (1, 2, or 3). Altitude can be selected in 3000 foot increments from the surface up to 42,000 feet MSL.

Pressing the **WIND DOWN** or **WIND UP** soft keys steps down or up in the 3,000 foot increments.

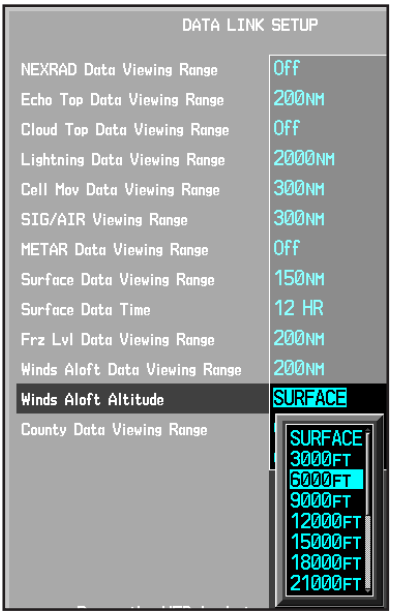


Figure 4-42 Winds Aloft Altitude Selection

1) While viewing a WX Data Link Map page of the WX page group, press the **MENU** key to display the Page Menu Options. The cursor flashes on the "Weather Setup" option. Press **ENT.**
2) Turn the large **MFD** knob to highlight the Winds Aloft Altitude value.
3) Turn the small **MFD** knob to highlight the desired value. Press **ENT** to accept the displayed value. The next option will be highlighted.
4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

4.4.15 County Warnings

County data provides specific public awareness and protection weather warnings from the National Weather Service (NWS). This can include information on fires, tornadoes, severe thunderstorms, flood conditions, and other natural disasters.

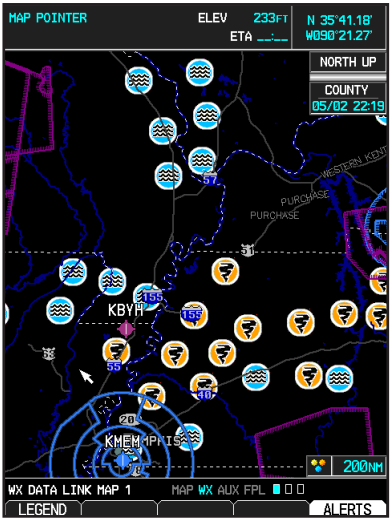


Figure 4-43 XM Weather - County Warnings

County Data Viewing Range

The County Data Viewing Range option allows you to select the map range where below that value County weather products will be shown on the selected MFD Wx Data Link Map pages (1, 2, or 3). When Off is selected, County Data will not be shown.

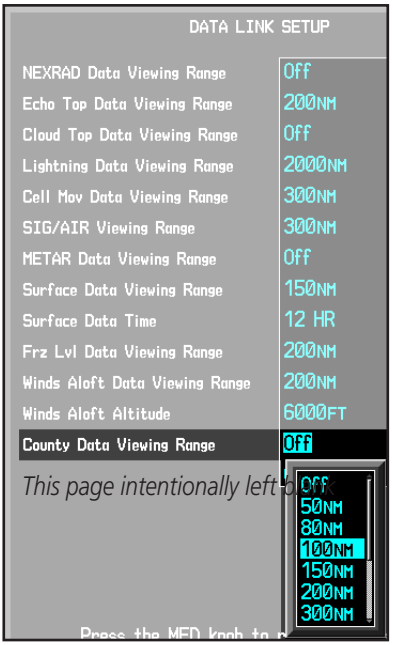


Figure 4-44 County Data Viewing Range Selection

1) While viewing a WX Data Link Map page of the WX page group, press the **MENU** key to display the Page Menu Options. The cursor flashes on the "Weather Setup" option. Press **ENT.**
2) Turn the large **MFD** knob to highlight the County Data Viewing Range value.
3) Turn the small **MFD** knob to highlight the desired value. Press **ENT** to accept the displayed value. The next option will be highlighted.
4) Press the small **MFD** knob to cancel selection or to end editing and return to the Navigation Map page or turn the large **MFD** knob to the next option.

5 ADDITIONAL FEATURES (OPTIONAL)

NOTE: *The availability of SafeTaxi, ChartView, or FliteCharts in electronic form may not preclude the requirement to carry paper charts aboard the aircraft. See AC 120-76A for more information.*

Additional features of the GDU 620 include the following:

- ChartView and FliteCharts™ electronic charts
- SafeTaxi™ diagrams
- XM Radio entertainment
- XM Weather (covered in Section 4.4)
- Traffic (covered in Sections 4.2 and 4.3)

SafeTaxi diagrams provide detailed taxiway, runway, and ramp information at more than 700 airports in the United States. By decreasing range on an airport that has a SafeTaxi diagram available, a close up view of the airport layout can be seen.

The optional ChartView and FliteCharts provide on-board electronic terminal procedures charts. Electronic charts offer the convenience of rapid access to essential information. Either ChartView or FliteCharts may be configured in the system, but not both.

The optional XM Radio entertainment audio feature of the GDL 69A Data Link Receiver handles more than 170 channels of music, news, and sports. XM Radio offers more entertainment choices and longer range coverage than commercial broadcast stations.

5.1 Viewing Charts

When the Chart function is available, charts will be shown on the third page of the Flight Plan page group. The chart page will default to the nearest airport if no flight plan or destination airport is present.

***NOTE:** The chart for the destination airport or loaded approach will automatically be selected.*

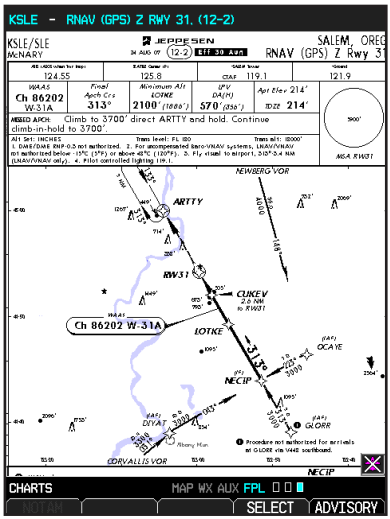


Figure 5-1 ChartView Chart Page

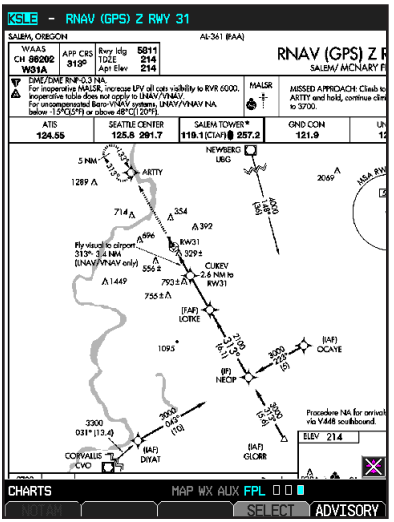


Figure 5-2 FliteChart Chart Page

1) Turn the large **MFD** knob to the Flight Plan (FPL) page group.
2) Turn the small **MFD** knob to the Charts page.

5.1.1 Chart Panning

More detail on the displayed chart can be viewed by zooming in with the Range keys and moving the chart around with pan mode.

***NOTE:** Panning mode is indicated by the presence of scroll bars.*

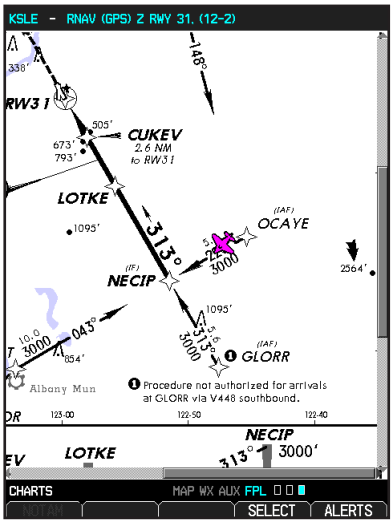


Figure 5-3 Zooming and Scrolling Around a Chart

1) While viewing the Charts page of the FPL page group, press the **RNG** (Range) ▲ ▼ keys to zoom in and out.
2) After zooming in, you may only see part of the chart. Press the small **MFD** knob to enter Pan mode and activate scroll bars on the edges of the chart. Turn the large and small **MFD** knobs to move around the chart.
3) Press the small **MFD** knob to cancel the scroll bars and exit panning.

5.1.2 Choosing a Chart for the Current Airport

NOTE: *The chart for the destination airport or loaded approach will automatically be selected.*

1) While viewing the Charts page of the FPL page group, press the **SELECT** soft key to activate chart selection.

2) Turn the large **MFD** knob to highlight the field to the right of the airport identifier.

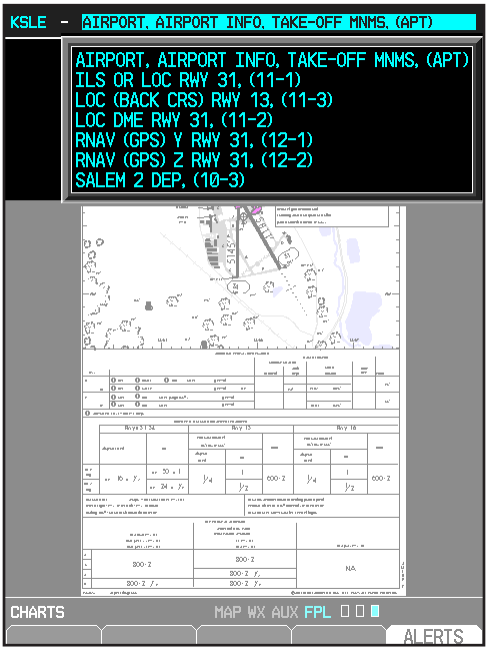


Figure 5-4 Activate Chart Selection for the Current Airport

3) Turn the small **MFD** knob to highlight the desired chart.

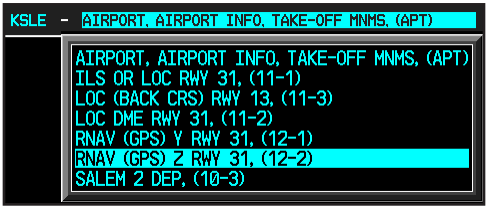


Figure 5-5 Choose Chart for the Current Airport

4) Press **ENT** to accept and view the selected chart.

5.1.3 Selecting a Chart by Identifier

A chart for a different airport may be chosen by selecting the identifier for the desired airport.

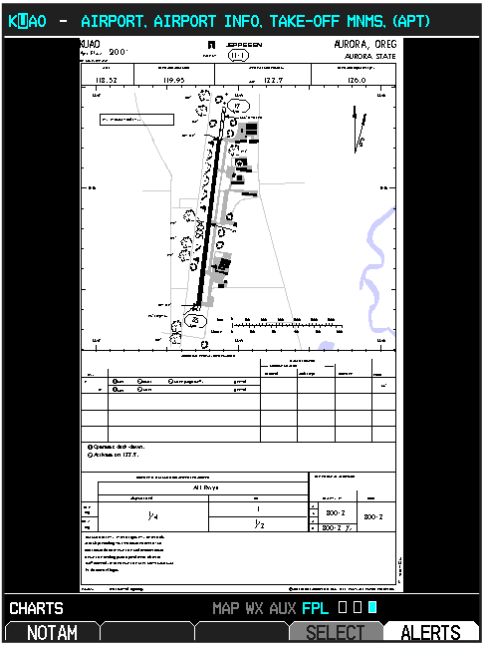


Figure 5-6 Airport Identifier Selection

1) While viewing the Charts page of the FPL page group, press the **SELECT** soft key to change the airport.
2) Use the large **MFD** knob to move the cursor to highlight a character.
3) Use the small **MFD** knob to change the character.
4) Press **ENT** to accept the selected airport.

5.1.4 Selecting a New Chart by FPL, NRST, or RECENT

You may select other charts to display based on your flight plan (FPL), charts of the nearest airport (NRST), or your most recently selected airports (RECENT).

Figure 5-7 Chart Category Selection

1) While viewing the Charts page of the FPL page group, press the **SELECT** soft key.
2) Turn the small **MFD** knob counterclockwise.
3) Turn the small **MFD** knob counterclockwise to show FPL, NRST, or RECENT.
4) Turn the large **MFD** knob to select the desired identifier and then press **ENT**.

5.1.5 Viewing Chart NOTAMs

If an active NOTAM (Notice to Airmen) exists for the selected chart, the **NOTAM** soft key will be available. Press the **NOTAM** soft key to view the NOTAM.

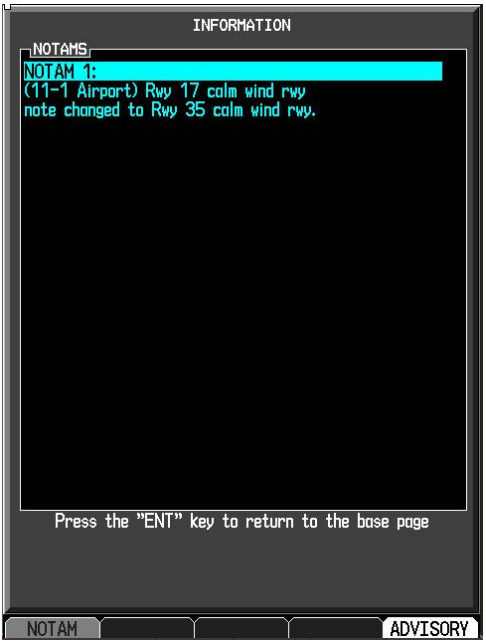


Figure 5-8 Chart NOTAM

5.1.6 Day/Night View

The Chart pages can be displayed on a white or black background for day or night viewing. The Day View offers a better presentation in a bright environment. The Night View gives a better presentation for viewing in a dark environment. When the CHART SETUP Box is selected the GDU 620 soft keys are blank.

1) In the FPL page group, turn the small **MFD** knob to reach the Charts page.
2) Press **MENU** to display the Options menu.
3) Press **ENT** to go to Chart Setup. The Color Scheme option will be highlighted.
4) Turn the small **MFD** knob to select Day - Auto - Night.
5) Press the small **MFD** knob or the **ENT** key to save the selected value and return to the Charts page.

NOTE: *Once an adjustment is made to the percentage field in Auto mode, the chart must be redrawn (zoomed in or out, or another chart selected) before the switch from Day to Night is seen.*

5.2 ChartView

ChartView resembles the paper version of Jeppesen terminal procedures charts. The charts are displayed in full color with high-resolution. The MFD depiction shows the aircraft position on the moving map in the plan view of approach charts and on airport diagrams.

The ChartView database subscription is available from Jeppesen, Inc. Available data includes:

- Arrivals (STAR)
- Departure Procedures (DP)
- Approaches
- Airport Diagrams
- Chart NOTAMs

5.2.1 Cycle Number and Revision

The ChartView database is revised every 14 days. Charts are still viewable during a period that extends from the cycle expiration date to the disables date. ChartView is disabled 70 days after the expiration date and is no longer available for viewing upon reaching the disable date. When turning on the GDU 620, the Power-up Page indicates any of nine different possible criteria for ChartView availability. See the table below for the various ChartView Power-up Page displays and the definition of each.

Power-up Page Display	Definition
[redacted]	Blank Line. GDU 620 system is not configured for ChartView. Contact a Garmin-authorized service center for configuration.

	System is configured for ChartView but no chart database is installed. Contact Jeppesen for a ChartView database.
	Normal operation. ChartView database is valid and within current cycle.
	ChartView database is within 1 week after expiration date. A new cycle is available for update.
	ChartView database is beyond 1 week after expiration date, but still within the 70 day viewing period.
	ChartView database has timed out. Database is beyond 70 days after expiration date. ChartView database is no longer available for viewing.
	System time is not available. GPS satellite data is unknown or the GPS navigator has not yet locked onto satellites. Check database cycle number for effectivity.
	System is verifying chart database when new cycle is installed for the first time.
	After verifying, chart database is found to be corrupt. ChartView will not be available.

Table 5-1 Power-up Page Annunciations and Definitions

The ChartView time critical information can also be found on the AUX - System Status page. The database CYCLE number, EXPIRES, and DISABLES dates of the ChartView database appear in either blue or yellow text. When the ChartView EXPIRES date is reached, ChartView becomes inoperative 70 days later. This is shown as the DISABLES date. When the DISABLES date is reached, charts are no longer available for viewing.

Select the **DBASE** soft key for scrolling through the database information. Scroll through the database with the **MFD** knob or **ENT** key.

The ChartView database is provided directly from Jeppesen. Refer to Jeppesen Databases in Appendix A for instructions on revising the ChartView database.

5.3 FliteCharts

FliteCharts™ resemble the paper version of National Aeronautical Charting Office (NACO) terminal procedures charts. The charts are displayed with high-resolution and in color for applicable charts.

FliteCharts database subscription is available from Garmin. Available data includes:

- Arrivals (STAR)
- Departure Procedures (DP)
- Approaches
- Airport Diagrams

5.3.1 Cycle Number and Revision

FliteCharts data is revised every 28 days. Charts are still viewable during a period that extends from the cycle expiration date to the disables date. FliteCharts is disabled 180 days after the expiration date and are no longer available for viewing upon reaching the disables date. When turning on the GDU 620, the Power-up page indicates any of five different possible criteria for chart availability. These indications are whether the databases are not configured, not available, current, out of date, or disabled. See the table below for the various FliteCharts Power-up page displays and the definition of each.

Power-up Page Display	Definition
	Blank Line. G600 system is not configured for FliteCharts. Contact a Garmin-authorized service center for configuration.
	System is configured for FliteCharts but no chart database is installed. Refer to Updating Garmin Databases in Appendix A for the FliteCharts database.

	Normal operation. FliteCharts database is valid and within current cycle.
	FliteCharts database is beyond the expiration date, but still within the 180 day viewing period.
	FliteCharts database has timed out. Database is beyond 180 days after expiration date. FliteCharts database is no longer available for viewing.

Table 5-2 FliteCharts Power-up Page Annunciations and Definitions

5.4 Safe Taxi

SafeTaxi™ is an enhanced feature that gives greater map detail when zooming in on airports at close range. The airport display on the map reveals runways with numbers, taxiways with identifying letters/numbers, and airport landmarks including ramps, buildings, control towers, and other prominent features. Resolution is greater at lower map ranges. When the aircraft location is within the screen boundary, including within SafeTaxi ranges, an airplane symbol is shown on any of the navigation map views for enhanced position awareness.

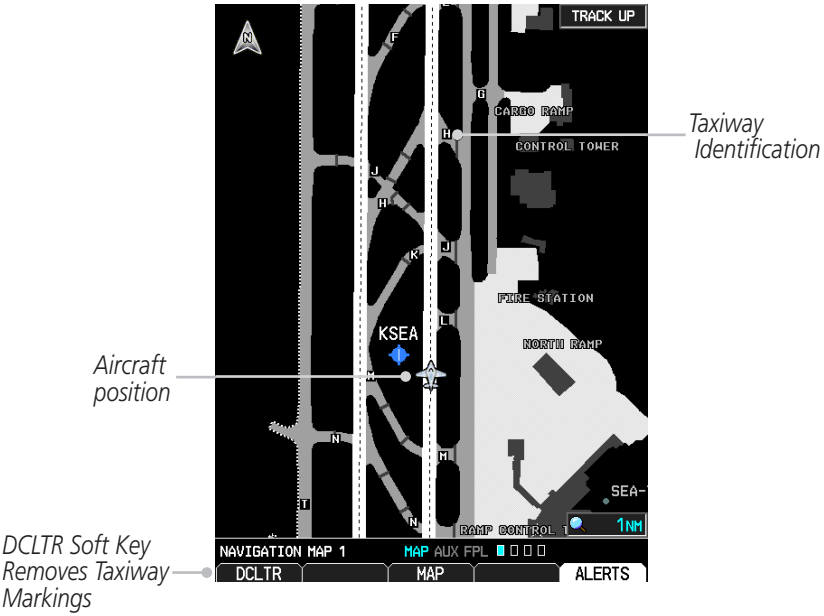


Figure 5-9 SafeTaxi Depiction on the Navigation Map Page

5.4.1 Using SafeTaxi

Any map page that displays the navigation view can also show the SafeTaxi airport layout within the maximum configured range. The following is a list of pages where the SafeTaxi feature can be seen:

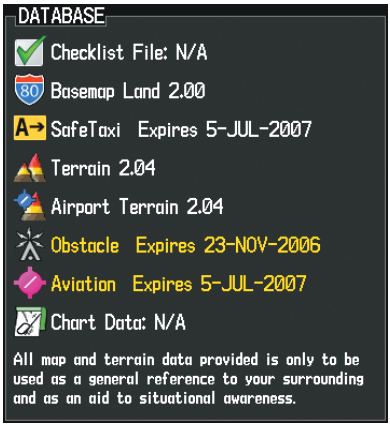
- Navigation Map Page
- Weather Datalink Page
- Airport Information Page
- Intersection Information Page
- NDB Information Page
- VOR Information Page
- User Waypoint Information Page

During ground operations the aircraft's position is displayed in reference to taxiways, runways, and airport features. When panning over the airport, features such as runway holding lines and taxiways are shown.

The **DCLTR** soft key (declutter) label advances to DCLTR-1, DCLTR -2, and DCLTR-3 each time the soft key is selected for easy recognition of decluttering level. Selecting the **DCLTR** soft key removes the taxiway markings and airport feature labels. Selecting the **DCLTR-1** soft key removes VOR station ID, the VOR symbol, and intersection names if within the airport plan view. Selecting the **DCLTR-2** soft key removes the airport runway layout, unless the airport in view is part of an active route structure. Pressing the **DCLTR-3** soft key cycles back to the original map detail. Refer to Map Declutter Levels in the Navigation Map Section.

5.4.2 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 GDU 620, 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 "SafeTaxi: N/A" appears in white if no SafeTaxi data is available on the database card.



SafeTaxi Database is Current

SafeTaxi Database has Expired

SafeTaxi Database Not Available

Figure 5-10 Power-up Page, SafeTaxi Database

The SafeTaxi Region, Version, Cycle, Effective date and Expires date of the database cycle can also be found on the AUX - 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. Expired SafeTaxi data is never disabled.

5.5 XM Radio Entertainment

NOTE: *Refer to the Hazard Avoidance Section for information about XM Weather products.*

The optional XM Radio entertainment feature of the GDL 69A Data Link Receiver is available for the pilot's and passengers' enjoyment. The GDL 69A can receive XM Satellite Radio® entertainment services at any altitude throughout the Continental U.S. Entertainment audio is not available on the GDL 69 Data Link Receiver.

XM Satellite Radio offers a variety of radio programming over long distances without having to constantly search for new stations. Based on signals from satellites, coverage far exceeds land-based transmissions. XM Satellite Radio services are subscription-based. For more information on specific service packages, visit www.xmradio.com.

5.5.1 Activating XM Satellite Radio Services

The service is activated by providing XM Satellite Radio with either one or two coded IDs, depending on the equipment. Either the Audio Radio ID or the Data Radio ID, or both, must be provided to XM Satellite Radio to activate the entertainment subscription. The XM Satellite Radio Activation Instructions are included with the unit (also available at www.garmin.com, P/N 190-00355-04).

It is not required to activate both the entertainment and weather service subscriptions with the GDL 69A. Either or both services can be activated. XM Satellite Radio uses one or both of the coded IDs to send an activation signal that, when received by the GDL 69A, allows it to play entertainment programming.

These IDs are located:

- On the label on the back of the Data Link Receiver
- On the XM Information Page on the MFD

Contact the installer if the Data Radio ID and the Audio Radio ID cannot be located.

NOTE: *The* ***LOCK*** *Soft Key on the XM Information Page (Auxiliary Page Group) is used to save GDL 69A activation data when the XM services are initially set up. It is not used during normal XM Radio operation, but there should be no adverse effects if inadvertently selected during flight. Refer to the GDL 69/69A XM Satellite Radio Activation Instructions (190-00355-04, Rev G, or later) for further information.*

1) Contact XM WX Satellite Radio through the e-mail address listed on their web site (www.xmradio.com) or by the customer service phone number listed on the web site (1-800-985-9200). Follow the instructions provided by XM Satellite Radio services.
2) Turn the large **MFD** knob to the AUX page group.
3) Turn the small **MFD** knob to the XM Information Page.
4) Verify that the desired services are activated.
5) Select the **LOCK** soft key.
6) Turn the large **MFD** knob to highlight "YES."
7) To complete activation, press the **ENT** key.

If XM weather services have not been activated, all the weather product boxes are cleared on the XM Information Page and a yellow Activation Required message is displayed in the center of the Weather Data Link Page (Map Page Group). The Service Class refers to the groupings of weather products available for subscription.

5.5.2 XM Information

The Aux mode XM Information page displays information about the XM radios, service class, and products when the GDL 69/69A is installed and the XM Radio service is activated. The Data and Audio radios have separate Identification Numbers. The Service Class determines the features that are available. The Weather Products window shows the products with a solid box to the left of the product active with your subscription. The boxes for products not in your subscription will be hollow.

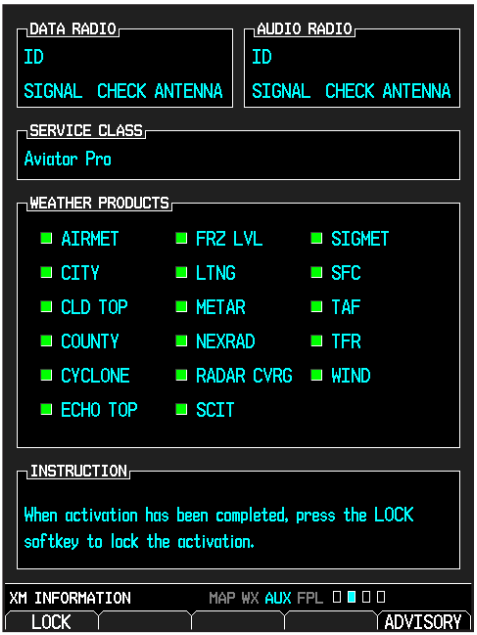


Figure 5-11 XM Information

1) In the AUX page group, turn the small **MFD** knob to display XM Information.
2) The **LOCK** soft key is used to "lock" your XM subscription activation. This is only used for the initial subscription or to make a change.

5.5.3 XM Entertainment Radio

Audio entertainment is available through the XM Satellite Radio Service when activated in the optional installation of the GDL 69A. The GDU 620 serves as the display and control head for your remotely mounted GDL 69A. XM Satellite Radio allows you to enjoy a variety of radio programming over long distances without having to constantly search for new stations. Based on signal from satellites, coverage far exceeds land-based transmissions. When enabled, the XM Satellite Radio audio entertainment is accessible in Aux page group.

The information on the XM Satellite Radio display is composed of four areas: the Active Channel, Available Channels, Category of the highlighted channel, and the Volume setting. The Active Channel window shows the Channel Name and Number, Artist, Song Title, and Category.

1) Turn the large **MFD** knob to Aux Mode.

2) Turn the small **MFD** knob to the XM Radio page.

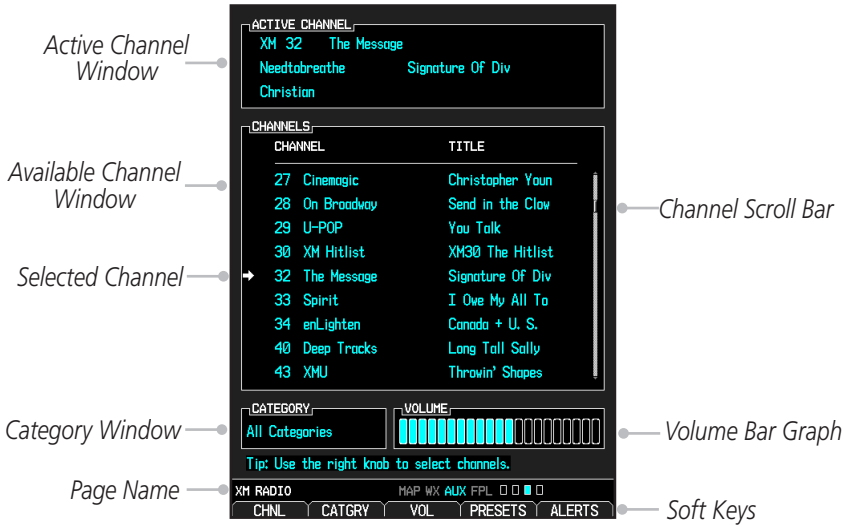


Figure 5-12 XM Radio

5.5.3.1 Channel Categories

The Category window displays the currently selected category of audio. Categories of channels, such as Jazz, Rock, or News, can be selected to list the available channels for a type of music or other contents.

1) While viewing the XM Radio page of the AUX page group, press the **CATGRY** soft key to activate Category selection.

2) Turn the small **MFD** knob to select the desired category. When the MFD knob is turned to select a category, the soft keys will not be shown.

Figure 5-13 XM Category List

Figure 5-14 XM Category Soft Keys

3) Press **ENT** to display the list of channels for the highlighted category in the Channels window.

4) Press the small **MFD** knob to cancel selection or to end editing.

Or

1) Press **CATGRY** and then the **CAT +** or **CAT –** soft keys to increment up or down one category at a time.

2) Press **ALL** to show the channels for all categories. Use the large and small **MFD** knobs to select desired channel.

3) Press **ENT** to save the selection or press the small **MFD** knob to cancel selection.

5.5.3.2 Selecting an XM Radio Channel

The Channel feature is used to navigate through the channels in the selected category.

Figure 5-15 XM Channel Selection

1) While viewing the XM Radio page of the AUX page group, press the small **MFD** knob and then turn the small **MFD** knob to select the desired channel.
2) Press **ENT** to make the highlighted channel the Active Channel.

NOTE: *A delay of several seconds may occur when selecting a channel. The listed title may end before the radio begins playing the current Active Channel material.*

3) Press the small **MFD** knob to cancel selection or to end editing.

Or

4) Press **CHNL** and then the **CH +** or **CH –** soft keys to increment up or down one channel at a time in the active category.

Or

5) Press **CHNL** and then the **DIR CH** soft key to directly select a channel in the active category. Use the large and small **MFD** knobs to select desired channel.
6) Press **ENT** to save the selection or press the small **MFD** knob to cancel selection.

5.5.3.3 XM Radio Volume

The Volume control allows you to set the audio volume level, as well as mute the audio.

Figure 5-16 XM Radio Setting Volume

1. While viewing the XM Radio page of the AUX page group, press the **VOL** soft key.
2. Press the **VOL +** or **VOL –** soft keys, or turn the small **MFD** knob, to adjust the radio volume.

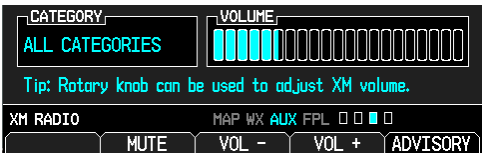


Figure 5-17 XM Radio Volume Controls

3) Press **MUTE** to mute the radio volume.
4) Press **MUTE** again or the **VOL +** or **VOL –** soft keys to unmute the radio volume.

5.5.3.4 XM Radio Channel Presets

The **PRESET** soft key allows you to store the Active Channel into a selected preset position for easy later recall. A delay of several seconds can occur when setting or recalling a preset.

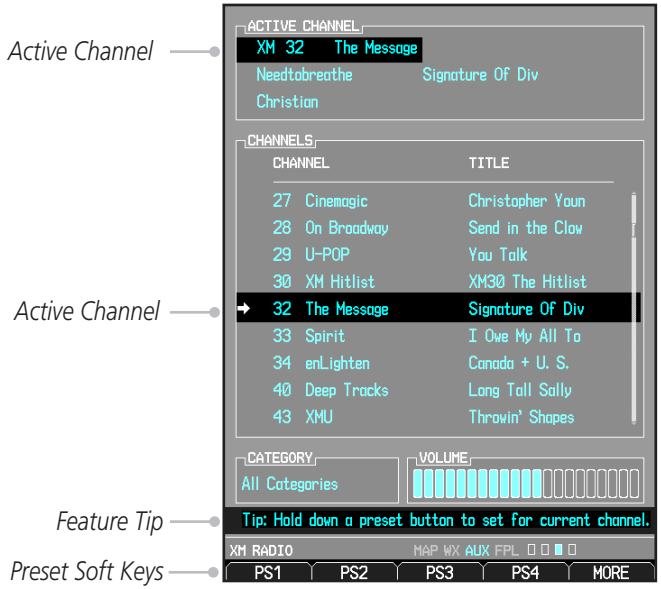


Figure 5-18 XM Radio Presets

Setting a Preset

1) While viewing the XM Radio page of the AUX page group, you may set a preset for the Active Channel. Press the **PRESETS** soft key.
2) Press and hold a preset soft key, such as **PS1**.
3) Press the **MORE** soft key to display the next series of presets.

Recalling a Preset

1) While viewing the XM Radio page of the AUX page group, press the **PRESETS** soft key.
2) Press the preset soft key for the desired stored channel, such as **PS1**.
3) Press the **MORE** soft key to display the next series of presets.

5.5.4 GDL 69/69A Data Link Receiver Troubleshooting

Some quick troubleshooting steps listed below can be performed to find the possible cause of a failure.

- Ensure the owner/operator of the aircraft in which the Data Link Receiver is installed has subscribed to XM
- Ensure the XM subscription has been activated
- Perform a quick check of the circuit breakers to ensure that power is applied to the Data Link Receiver

For troubleshooting purposes, check the LRU Information Box on the AUX - System Status Page for Data Link Receiver (GDL 69/69A) status, serial number, and software version number. If a failure has been detected in the GDL 69/69A the status will be marked with a red "X."

1) Turn the large **MFD** knob to select the AUX Page Group.
2) Turn the small **MFD** knob to select the System Status Page (the last page in the AUX Page Group).

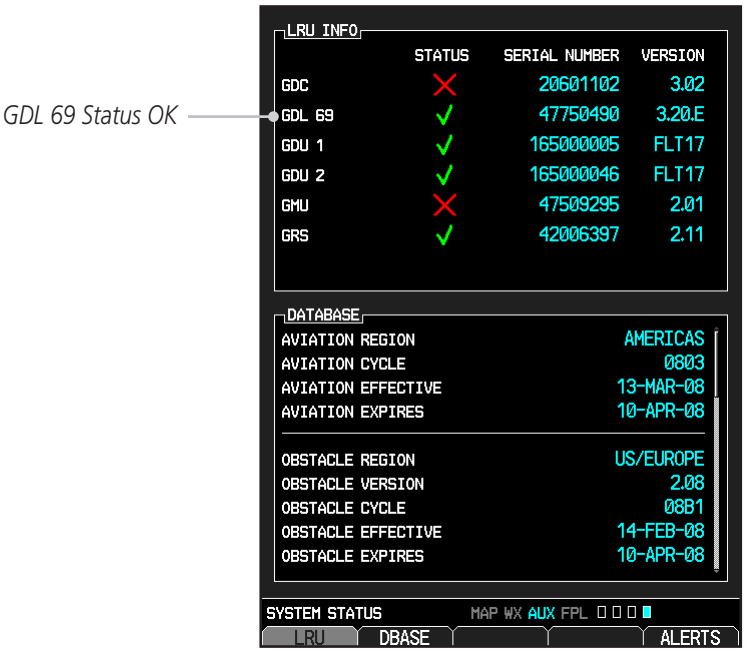


Figure 5-19 LRU Status Window

5.6 Autopilot Operation

The G600 is able to interface to certain autopilot systems to provide heading, course, and navigation information in much the same was as a typical HSI. Please refer to your particular autopilot manual for specific information and operation instructions.

5.6.1 Heading

You are able to control your selected autopilot heading with the GDU 620 by using the heading bug.

1) Press the **HDG** key on the PFD and turn the **PFD** knob to set the desired heading. When the knob is turned, the Selected Heading box will appear and remain for three seconds after the knob stops moving.
2) Engage your autopilot in heading hold mode.
3) Continue to control your selected autopilot heading by adjusting the heading bug.

Figure 5-20 Adjusting the Heading Bug

5.6.2 Altitude Capture (Optional Interface)

The altitude selector function is a separately purchased option which works with the autopilot. At the set altitude, the autopilot will go from a Vertical Speed Mode (a climb or descent) to an Altitude Capture mode where it will hold the selected altitude.

1) Select the desired altitude on the GDU 620 by pressing the **ALT** key and rotating the **PFD** knob so the Altitude bug is at the desired altitude.
2) Engage the autopilot in altitude capture mode and select the desired vertical speed (if able) on the autopilot controller.

3) The autopilot will command a climb or descent at the selected vertical speed (on the autopilot controller) and capture the selected altitude.

***NOTE**: The selected Vertical Speed bug on the GDU 620 will not control the autopilot vertical speed. The autopilot vertical speed must be selected directly on the autopilot controller.*

5.6.3 Autopilot Navigation

1) Set your navigation source and HSI to the desired course.
2) Engage your autopilot in navigation mode.
3) Control your autopilot navigation through the navigation source and the HSI.

5.6.3.1 Autopilot Operation with GPSS Enabled Autopilots

The GDU 620 processes GPSS information and sends it to the autopilot to allow the aircraft to anticipate turns and make smooth transitions when passing waypoints.

1) Set your navigation source and HSI to the desired GPS course.
2) Engage your autopilot in GPSS navigation mode.
3) Control your autopilot navigation through the navigation source and HSI.

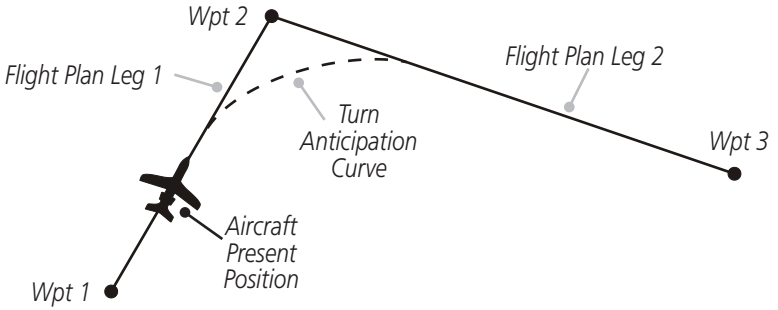


Figure 5-21 GPSS Turn Anticipation

5.6.3.2 Autopilot Operation with the GDU 620 Emulating GPSS

NOTE: *The GDU 620 has the ability to emulate GPSS roll steering for autopilots that do not support GPSS. The GDU 620 emulates GPSS by sending headings to the autopilot that guide turn anticipation.*

Many autopilots do not have a GPSS mode. GPSS utilizes roll command signals calculated by the GPS navigator and sent to the autopilot in order to allow the aircraft to anticipate turns, make smooth transitions when passing waypoints, and fly leg types, such as Procedure Turns and Course Reversals. In order for GPSS to function correctly, the autopilot must have the capability of interpreting the roll commands. In order to provide GPSS functionality for autopilots that do not support roll commands, the GDU 620 has the capability to emulate GPSS commands by continually changing the selected heading data sent to the autopilot.

GPSS emulation functionality in the GDU 620 is controlled by an optional external Autopilot Heading Datum switch. When GPSS emulation is active on the GDU 620, the HSI heading bug does not control the autopilot. Instead, the GDU 620 processes heading information and sends it to the autopilot to emulate what GPSS would normally do. The GPSS/Heading bug inactive annunciation in the lower left corner of the PFD reminds the pilot that the heading bug is not controlling the autopilot.

1) Select GPS navigation on the HSI.
2) Set the HSI to the desired course (if in OBS mode).
3) Set the optionally installed Autopilot Heading Datum switch to GPSS.

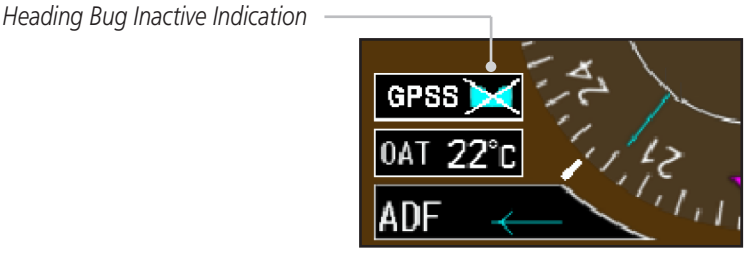


Figure 5-22 GPSS Emulation Indication

4) Engage your autopilot in Heading mode.

NOTE: *With GPSS engaged and in Heading mode, the Heading bug will not control your autopilot heading. This is annunciated next to the HSI by the GPSS annunciation. The Heading bug may still be used for reference, but the autopilot will not control the aircraft via the heading bug.*

6 ANNUNCIATIONS AND ALERTS

6.1 Alerts

Alert Message	Description	Action
AHRS1 TAS	• AHRS1 not receiving true airspeed. • Displayed heading and attitude data is still valid. • Additional loss of GPS data will cause loss of heading and attitude data.	• Check ADC cable. • Contact your Garmin dealer for service.
HDG FAULT	• AHRS1 magnetometer fault has occurred. • Heading data is unreliable.	• Check AFMS for limitations. • Use Compass or other course information. • Contact your Garmin dealer for service.
GEO LIMITS	• AHRS1 too far North/South, no magnetic compass. • Operating in extreme north latitudes has rendered heading data unreliable.	• Use alternate means of navigation. • Check AFMS for limitations.

Alert Message	Description	Action
AHRS1 GPS	• AHRS1 not receiving any GPS information. • Heading and attitude data, if displayed, is still valid. • Loss of ADC will cause altitude failure.	• Verify navigator is on and has a GPS signal and is not in self-test mode. • Check AFMS for limitations. • Contact your Garmin dealer for service.
AHRS1 GPS	• AHRS1 operating exclusively in no-GPS mode. • Displayed heading and attitude data is still valid. • Additional loss of airspeed data from ADC will cause loss of heading and attitude data. • Verify navigator is receiving GPS signal.	• Check AFMS for limitations. • Contact your Garmin dealer for service.
AHRS1 SRVC	• AHRS1 magnetic-field model needs update.	• G600 requires service to update the magnetic field model. • Contact your Garmin dealer for service.
AHRS1 GPS	• AHRS1 not receiving backup GPS information.	• Verify second GPS unit operation. • Contact your Garmin dealer for service.

Alert Message	Description	Action
GPS1 FAIL	• GPS1 is inoperative.	• Use an alternate navigation source.
GPS2 FAIL	• GPS2 is inoperative.	• Use an alternate navigation source.
<LRU> CONFIG	• <LRU> config error. Config service req'd. • <LRU> is not configured correctly. • <LRU> may not function properly.	• Contact your Garmin dealer for service.
SIMULATOR	• Sim mode is active. Do not use for navigation.	• Simulator mode is active.
DATA LOST	• Pilot stored data was lost. Recheck settings.	• Reset your settings. • G600 pilot configurable items have been returned to default settings. • Contact your Garmin dealer for service.
<LRU> DB ERR	• <LRU> database error exists.	• Error present in <specific database>. • Data from <specific database> should be considered suspect. • Contact your Garmin dealer for service.
<LRU> SERVICE	• <LRU> needs service. Return unit for repair.	• Contact your Garmin dealer for service.

Alert Message	Description	Action
<LRU> COOLING	• <LRU> has poor cooling. Reducing power usage. • GDU backlighting has been reduced.	• Extended operation at high temperatures is not recommended as damage to the GDU may occur. • Contact your Garmin dealer for service.
CNFG MODULE	• GDU configuration module is inoperative. • Aircraft configuration items have been maintained unless this message occurred during configuration.	• Unit will need to be re-configured when service is complete. • Contact your Garmin dealer for service.
LTNG SENSOR FAIL	• Lightning sensor has failed.	• Contact your Garmin dealer for service.
TRAFFIC FAIL	• Traffic device has failed. • Traffic data will no longer be displayed.	• Contact your Garmin dealer for service.
ADC1 ALT EC	• ADC1 altitude error correction is unavailable.	• Contact your Garmin dealer for service.
ADC1 AS EC	• ADC1 airspeed error correction is unavailable.	• Contact your Garmin dealer for service.
GPS2 FPL USED	• GPS2 flight plan in use. • The GPS1 has failed and GPS2 is configured and operating.	• Contact your Garmin dealer for service.

Alert Message	Description	Action
NAV1 FAIL	• NAV1 is inoperative.	• Switch to alternate navigation (GPS or otherwise) if available.
NAV2 FAIL	• NAV2 is inoperative.	• Switch to alternate navigation (GPS or otherwise) if available.
CAL LOST	• Calibration Data Lost. • Navigation, Autopilot, and Flight Director functionality is unreliable. • PFD/MFD coloration may be incorrect.	• Contact your Garmin dealer for service.
FAN 1 FAIL Cooling fan 1 has failed.	• Unit may operate at extreme temperatures • Extended operation at high temperatures is not recommended as that damage to the GDU may occur. • PFD/MFD coloration may be incorrect. • Backlight may dim to reduce power and heat.	• Contact your Garmin dealer for service.

Alert Message	Description	Action
FAN 2 FAIL	• Cooling fan 2 has failed. • Unit may operate at extreme temperatures • Extended operation at high temperatures is not recommended as that damage to the GDU may occur. • PFD/MFD coloration may be incorrect. • Backlight may dim to reduce power and heat.	• Contact your Garmin dealer for service.
SW MISMATCH	• GDU software version mismatch. Xtalk is off.	• Contact your Garmin dealer for service.
CNFG MISMATCH	• GDU 1-2 airframe configuration settings disagree.	• Contact your Garmin dealer for service.
GPS(1/2) PPS FAIL	• PPS has failed from GPS 1/2. • The PPS signal has not been received in more than 5 seconds. • Could be caused by a navigator failure or a wiring failure.	• Contact your Garmin dealer for service.

Alert Message	Description	Action
AHRS1 GPS	• AHRS1 using backup GPS.	• If the system has dual GPS navigators, the primary GPS navigation information is not being forwarded to the AHRS. The AHRS is using GPS position information from the secondary navigator.
MANIFEST	• <LRU> software mismatch, communication halted.	• Contact your Garmin dealer for service.
<LRU> VOLTAGE	• <LRU> has low voltage. Reducing power usage.	• Contact your Garmin dealer for service.

Table 6-1 Alert Messages

6.2 System Status

The System Status page of Aux mode shows the status, serial number, and software version of LRUs and the date of databases. There are no menu pages. In the LRU Status column, a green check means the unit is present and operating properly, while a red "X" indicates an absence or failure.

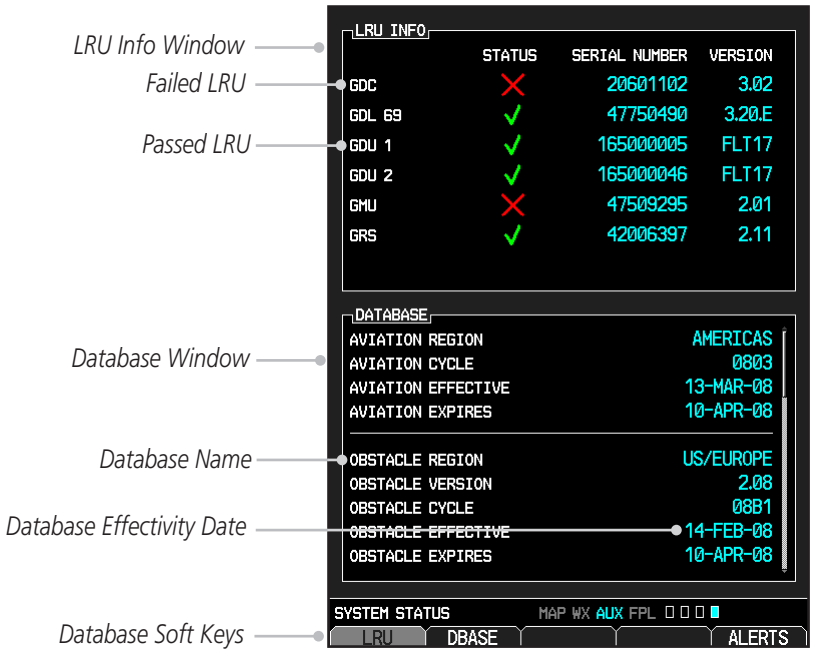


Figure 6-1 System Status

7 SYMBOLS

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

7.1 Map Page Symbols

Symbol	Description
	Unknown Airport
	Non-towered, Non-serviced Airport
	Towered, Non-serviced Airport
	Non-towered, Serviced Airport
	Towered, Serviced Airport
	Soft Surface, Serviced Airport
	Soft Surface, Non-serviced Airport
	Private Airport
	Heliport
	Intersection
	LOM (compass locator at outer marker)
	NDB (Non-directional Radio Beacon)
	VOR
	VOR/DME
	ILS/DME or DME-only
	VORTAC
	TACAN

Table 7-1 Map Page Symbols

7.2 SafeTaxi Symbols

Symbol	Description
	Helipad
	Airport Beacon
	Under Construction Zones
	Unpaved Parking Areas

Table 7-2 SafeTaxi Symbols

7.3 Traffic Symbols

Symbol	Description (Highest to Lowest Priority)
	Traffic Advisory (TA), In Range
	Traffic Advisory (TA), Out of Range
	Proximate Advisory (PA)
	Other Traffic
	On-Ground Aircraft
	Ground Non-Aircraft Vehicle

Table 7-3 Traffic Symbols

7.4 Terrain Obstacle Symbols

Unlighted Obstacle (Height is less than 1000 ft AGL)	Lighted Obstacle (Height is less than 1000 ft AGL)	Unlighted Obstacle (Height is greater than 1000 ft AGL)	Lighted Obstacle (Height is greater than 1000 ft AGL)
			

Figure 7-1 Obstacle Altitude/Color Correlation

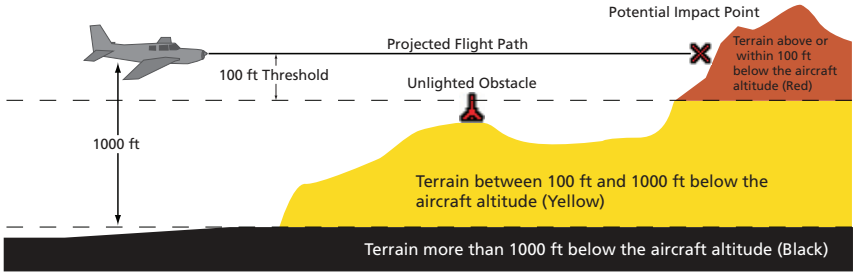


Figure 7-2 TERRAIN Altitude/Color Correlation

7.5 Basemap Symbols

Symbol	Description
	Interstate Highway
	State Highway
	US Highway
	National Highway - 2-digit drawn inside
	Small City or Town
	Medium City
	Large City

Table 7-4 Basemap Symbols

7.6 Map Toolbar Symbols

Symbol	Description
	Overzoom Indicator
	Terrain Proximity Enabled and Available Indicator
	Terrain Proximity Enabled and Not Available Indicator
	Traffic Enabled and Available Indicator
	Traffic Enabled and Not Available Indicator

Table 7-5 Map Toolbar Symbols

7.7 XM Weather Toolbar Symbols

Symbol	Description
	NEXRAD
	Cloud Top (Cloud Top and Echo Top Mutually Exclusive)
	Echo Top (Cloud Top and Echo Top Mutually Exclusive)
	XM Lightning
	Cell Movement
	SIGMETs / AIRMETs
	METARs
	City Forecast
	Surface Analysis
	Freezing Levels
	Winds Aloft
	County Warnings
	Cyclone Warnings

Table 7-6 XM Weather Toolbar Symbols

7.8 Miscellaneous Symbols

Symbol	Description
	Default Aircraft (ownship)
	High Wing Aircraft
	Jet Aircraft
	Default Map Cursor
	Measuring Cursor
	Wind Vector (w/ valid GPS solution)
	Parallel Track Waypoint
	Restricted/Prohibited/Warning/Alert
	TFR (Temporary Flight Restrictions)
	MOA
	Class B Airspace
	Class C Airspace
	Class D Airspace
	User Waypoint

Table 7-7 Miscellaneous Symbols

8 GLOSSARY

ACT, ACTV	active, activate
ADC	Air Data Computer
ADF	Automatic Direction Finder
ADI	Attitude Direction Indicator
AFM	Airplane Flight Manual
AFMS	Airplane Flight Manual Supplement
AGL	Above Ground Level
AHRS	Attitude and Heading Reference System
AIM	Airman's Information Manual
AIRMET	Airman's Meteorological Information
ALT	altitude
AP	autopilot
APR	approach
APT	airport, aerodrome
ARINC	Aeronautical Radio Incorporated
ARSPC	airspace
ARTCC	Air Route Traffic Control Center
AS	airspeed
ASOS	Automated Surface Observing System
ATC	Air Traffic Control
ATCRBS	ATC Radar Beacon System
ATIS	Automatic Terminal Information Service
AUX	auxiliary
AWOS	Automated Weather Observing System
BARO	barometric setting
BC	backcourse
Bearing	The compass direction from the present position to a destination waypoint
BRG	bearing
C	center runway
°C	degrees Celsius
CDI	Course Deviation Indicator
CHNL	channel
CLD	cloud
CLR	clear
CONFIG	configuration
Course	The line between two points to be followed by the aircraft

Crosstrack Error	The distance the aircraft is off a desired course in either direction, left or right
CRS	course
CRSR	cursor
CTA	Control Area
CTRL	control
CUM	The total of all legs in a flight plan.
D ALT	density altitude
DB, DBASE	database
DCLTR, DECLTR	declutter
deg	degree
DEP	departure
Desired Track (DTK)	The desired course between the active "from" and "to" waypoints
DEST	destination
DFLT	default
DIS	distance
Distance	The 'great circle' distance from the present position to a destination waypoint
DME	Distance Measuring Equipment
DP	Departure Procedure
DPRT	departure
DSBL	disabled
DTK	Desired Track
ELEV	elevation
EMI	Electromagnetic Interference
ENR	en route
En route Safe Altitude	The recommended minimum altitude within ten miles left or right of the desired course on an active flight plan or direct-to
ENT	enter
ERR	error
ESA	En route Safe Altitude
ETA	Estimated Time of Arrival
ETE	Estimated Time Enroute
°F	degrees Fahrenheit
FAA	Federal Aviation Administration

FCC	Federal Communication Commission
FCST	forecast
FD	flight director
FIS-B	Flight Information Services-Broadcast
FISDL	Flight Information Service Data Link
FPL	flight plan
FREQ	frequency
FRZ	freezing
FSS	Flight Service Station
ft	foot/feet
G/S, GS	glideslope
GDC	Garmin Air Data Computer
GDL	Garmin Satellite Data Link
GDU	Garmin Display Unit
GEO	geographic
GLS	Global Navigation Satellite Landing System
GMA	Garmin Audio Panel System
GMT	Greenwich Mean Time
GMU	Garmin Magnetometer Unit
GPS	Global Positioning System
GPSS	GPS Roll Steering
Groundspeed	The velocity that the aircraft is travelling relative to a ground position
Ground Track	*see Track*
GRS	Garmin Reference System
GS	Ground speed
GTX	Garmin Transponder
HDG	heading
Heading	The direction an aircraft is pointed, based upon indications from a magnetic compass or a properly set directional gyro
HFOM	Horizontal Figure of Merit
Hg	mercury
hPa	hectopascal
HPL	Horizontal Protection Level
HSDB	High-Speed Data Bus
HSI	Horizontal Situation Indicator
Hz	Hertz

IAF	Initial Approach Fix
ICAO	International Civil Aviation Organization
IFR	Instrument Flight Rules
IGRF	International Geomagnetic Reference Field
ILS	Instrument Landing System
IMC	Instrument Meteorological Conditions
INFO	information
in HG	inches of mercury
INT	intersection(s)
INTEG	integrity (RAIM unavailable)
L	left, left runway
LAT	latitude
LCD	Liquid Crystal Display
LCL	local
LED	Light Emitting Diode
Leg	The portion of a flight plan between two waypoints
LIFR	Low Instrument Flight Rules
LNAV	Lateral Navigation
LOC	localizer
LOI	loss of integrity (GPS)
LON	longitude
LPV	Localizer Performance with Vertical guidance
LRU	Line Replacement Unit
LT	left
LTNG	lightning
MAG	Magnetic
MAG VAR	Magnetic Variation
MapMX	A proprietary data format used to forward navigation information from the GNS units to the GDU 620
MAX	maximum
MAXSPD	maximum speed (overspeed)
MDA	barometric minimum descent altitude
METAR	Aviation Routine Weather Report
MFD	Multi Function Display
MIN	minimum
Minimum Safe Altitude	Uses Grid MORAs to determine a safe altitude within ten miles of the aircraft present position

MKR	marker beacon
MOA	Military Operations Area
MOV	movement
mpm	meters per minute
MSA	Minimum Safe Altitude
MSG	message
MSL	Mean Sea Level
MT	meter
mV	millivolt(s)
MVFR	Marginal Visual Flight Rules
NAV	navigation
NAVAID	NAVigation AID
NDB	Non-Directional Beacon
NEXRAD	Next Generation Radar
OAT	Outside Air Temperature
OBS	Omni Bearing Selector
PA	Proximity Advisory
PC	personal computer
PFD	Primary Flight Display
P. POS	Present Position
PTK	parallel track
QTY	quantity
R	right, right runway
RAIM	Receiver Autonomous Integrity Monitoring
RAM	random access memory
REF	reference
REQ	required
REV	reverse, revision, revise
RMI	Radio Magnetic Indicator
RNG	range
RNWY	runway

RT	right
SBAS	Satellite-Based Augmentation System
SCIT	Storm Cell Identification and Tracking
SD	Secure Digital
SFC	surface
SIAP	Standard Instrument Approach Procedures
SID	Standard Instrument Departure
SIGMET	Significant Meteorological Information
SLP/SKD	slip/skid
SMBL	symbol
SPD	speed
SRVC, SVC	service
STAR	Standard Terminal Arrival Route
STATS	statistics
STBY	standby
STD	standard
SUA	Special Use Airspace
SUSP	suspend
SW	software
SYS	system
T	true
TA	Traffic Advisory
TACAN	Tactical Air Navigation System
TAF	Terminal Aerodrome Forecast
TAS	True Airspeed
TAS	Traffic Advisory System
TAT	Total Air Temperature
TAWS	Terrain Awareness and Warning System
TCA	Terminal Control Area
TCAS	Traffic Collision Avoidance System
TEMP	temperature
TERM	terminal
TFR	Temporary Flight Restriction
T HDG	True Heading
TIS	Traffic Information System
TMA	Terminal Maneuvering Area
Topo	topographic

Track	Direction of aircraft movement relative to a ground position; also 'Ground Track'
TRK	track
TRSA	Terminal Radar Service Area
UNAVAIL	unavailable
USR	user
UTC	Coordinated Universal Time
UTM/UPS	Universal Transverse Mercator/ Universal Polar Stereographic Grid
V, Vspeed	velocity (airspeed)
VAR	variation
VFR	Visual Flight Rules
VHF	Very High Frequency
VLOC	VOR/Localizer Receiver
VMC	Visual Meteorological Conditions
VNAV, VNV	vertical navigation
VOR	VHF Omni-directional Range
VORTAC	very high frequency omnidirectional range station and tactical air navigation
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

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APPENDIX A

SD Card Use and Databases

The G600 System uses Secure Digital (SD) cards to load and store various types of data. For basic flight operations, SD cards are required for database storage as well as database updates.

Jeppesen Databases

The navigation database is updated on a 28 day cycle. Navigation database updates are provided by Garmin and may be downloaded from the Garmin website "fly.garmin.com" onto a Garmin provided Supplemental Datacard. Contact Garmin at fly.garmin.com for navigation database updates and update kits. The Navigation database is stored internally and the Datacard is only used to transfer the database into the unit.

The optional ChartView database is updated on a 14 day cycle. The ChartView database is provided directly from Jeppesen. Contact Jeppesen (www.jeppesen.com) for ChartView subscription and update information.

Updating the Jeppesen navigation database

1) With the G600 System OFF, insert the SD card containing the navigation database update into the upper card slot of the GDU 620 to be updated (label of SD card should face up).
2) Turn the G600 System ON.
3) Verify the correct update cycle is loaded during power-up.

Garmin Databases

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

The following GDU 620 databases are stored on Supplemental Data Cards provided by Garmin:

- Terrain – The terrain database contains terrain mapping data. It is updated periodically and has no expiration date.
- Airport terrain – The airport terrain database contains detailed airport terrain data. It is updated periodically and has no expiration date.
- Obstacle – 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 obstacle database. It is very important to note that not all obstacles are necessarily charted and therefore may not be contained in the obstacle database. This database is updated on a 56-day cycle. Obstacles will still be shown after the database has expired.
- SafeTaxi – The SafeTaxi database contains detailed airport diagrams for selected airports. These diagrams aid in following ground control instructions by accurately displaying the aircraft position on the map in relation to taxiways, ramps, runways, terminals, and services. This database is updated on a 56-day cycle. SafeTaxi will still be shown after it has expired.
- FliteCharts – The FliteCharts database contains procedure charts for the United States only. This database is updated on a 28-day cycle. If not updated within 180 days of the expiration date, FliteCharts no longer functions.

Since these databases are not stored internally in the GDU 620, a Supplemental Data Card containing identical database versions must be kept in each display unit for dual installations. After subscribing to the desired database product, the database product will need to be downloaded to a Supplemental Data Card. Insert the Supplemental Data Card into the card slot shown in Figure A-1. The upper slot is typically used for updating the navigation database and is then normally left open. The card may be inserted in either slot. The Supplemental Data Card should not be removed except to update the databases stored on the card.

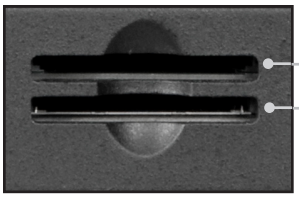

Figure A-1 SD Card Database Location

The Garmin databases can be updated by following the instructions detailed in the "Navigation Databases" section of the Garmin web site (*fly.garmin.com*). Once the updated files have been downloaded from the web site, a PC equipped with an appropriate SD card reader is used to unpack and program the new databases onto the existing Supplemental Data Cards. The following equipment is required to perform the update:

- Windows-compatible PC computer (Windows 2000 or XP recommended)
- SanDisk SD Card Reader, P/Ns SDDR-93 or SDDR-99 or equivalent card reader
- Updated database obtained from the Garmin web site
- Existing Supplemental Database SD Card (P/N 010-00769-42)

It may be necessary to have the system configured by a Garmin authorized service facility in order to use certain database features.

Updating Garmin databases

1) Download the data to the data cards from the appropriate web site.
2) Insert Navigation Database SD card in an empty card slot of the GDU 620. The SD card containing the ChartView, FliteCharts, SafeTaxi, or any other database (except for the Jeppesen Navigation Database) is typically inserted into the lower slot on the GDU 620.
3) Apply power to the G600 System. View the MFD power-up splash screen. Check that the databases are initialized and displayed on the splash screen. When updating the terrain and FliteCharts databases, an "in progress" message may be seen. If this message is present, wait for the system to finish loading before proceeding. Some databases can take up to 15 minutes to update.

Figure A-2 Database Information on the Splash Screen

4) Acknowledge the Power-up Page agreement by pressing the **ENT** key or the right most soft key.

5) Use the large **MFD** knob to select the AUX page group and then small **MFD** knob to reach the System Status Page.

6) Press the **DBASE** soft key to place the cursor in the "DATABASE" window.

7) Turn the small **MFD** knob to scroll through the list and check that all databases are current and there are no errors. If a database is highlighted in yellow, it is either expired or the G600 can not determine the date.

8) Power down the GDU 620.

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