Envision

EX5000
Multi-Function Display
Pilot's Guide

Software Release 8.2.2 or Later

AVIDYNE

Document Revision History

Date	Revision	Description
November 12, 2008	00	Released per ECO-08-426 Supports Release 8, including TWX Cell mode and Iridium Datalink (MLX770).
May 15, 2019	01	8.2.2 Software release.

This document is applicable to the following part numers:

● Software Part Number 530-00235-502 Release 8.2.2 or Later

● Hardware Part Number 700-00004-()

System Configuration

When contacting your dealer or Avidyne technical support, and when logging onto MyAvidyne.com for the first time, please have your Envision EX5000 serial number and Subscriber Communicator serial number available:

EnvisionEX5000 S/N: _____

Datalink Subscriber Communicator S/N: _____

About this Guide

This guide assumes that all available sensors and software options have been installed in your airplane. The page layouts and button descriptions in this guide may differ slightly from what you observe on your EX5000. If your system is configured with a partial set of the available sensors, then some views may differ from this guide.

> **Note**: All images contained within this document, including screenshots and other displays, are for reference use only and are subject to change. The images contained herein may differ slightly from your actual equipment or display.

Notes and Warnings

Notes and warnings provide guidance for the use of the EX5000. Avidyne strongly suggests that you pay close attention to notes and warnings for your own safety.

For example:

> **Note**: Notes provide useful information about how to use the EX5000.

> ⚠ Warnings are prefaced with exclamation points and denote information that can prevent serious injury or death on the part of the user.

The instructions and warnings in this manual are not intended to replace the instructions and warnings for other equipment on your aircraft. It is critical that you as the pilot in command have a complete understanding of the warnings, operating instructions, and limitations for all equipment installed on your aircraft.

> ⚠ This manual assumes that the reader is an appropriately licensed pilot. Avidyne strongly recommends that you use the EX5000 only under VFR conditions until you are very familiar with the EX5000.
>
> If you have questions, please contact Avidyne at **800-284-3963 (800-AVIDYNE)** before operating with the EX5000 under IFR conditions.

> ⚠ Before conducting flight operations, be sure to verify that time and date settings on the System Time Setup page are correct and in GMT (UTC). It is critical that the time be set to GMT to provide accurate display of Datalink weather. See Section I, "Aux Main Page" on page 67 for more information.

> ⚠ When using the EX5000, be sure to cross-check the data displayed against other data sources for accuracy including other flight deck instruments and charts.

The displayed terrain and obstacle indicators are only advisory. Do not rely on the EX5000 as the sole source of obstacle and terrain avoidance information. Always refer to current aeronautical charts for appropriate terrain and obstacle information.

The EX5000 is not intended to replace your navigation charts or primary navigation aids. Use the EX5000 as a supplement to other navigation sources, to enhance your overall situational awareness. Do not rely on the navigation data in your EX5000 as your sole reference for navigation.

While a properly updated database contains the latest official information available, the manufacturers will not be held responsible for any inaccuracy or omissions therein. **Never** use the terrain displayed on the EX5000 as the only reference for terrain avoidance.

The transmission of datalink weather information means there is some delay from real time until the weather information is displayed on the EX5000. Therefore, use datalink weather information only for strategic route planning. Avoid severe weather areas with a safe margin of distance. Do not use the EX5000 to penetrate severe weather, thunderstorms, cells or lines of cells.

By using Broadcast datalink, you can access weather information made available from sources external to Avidyne Corporation. Avidyne does not control, edit or review the content of such information and is not responsible for such information or the actions or conduct of any company that provides sources of weather data through the Broadcast datalink. Therefore, ALL WEATHER DATA ARE PROVIDED AS-IS and neither Avidyne nor its suppliers, subcontractors, or developers (collectively called "Suppliers") are responsible for: 1) the accuracy, completeness, timeliness, reliability, content, or availability of the weather data or any other datalink information accessed; 2) loss or damage to your records or data; or 3) your use of, or results achieved from, the weather data or any other information accessed.

Notice regarding NOTAM information

NOTAM information is subject to constant change and it is extremely important that all pilots check with Flight Service for applicable NOTAMs prior to EVERY flight. Call 1-800-WXBRIEF (992-7433) for the latest information.

The NOTAM information provided by the EX5000 is for planning purposes only. Always consult official NOTAMS for the latest restrictions.

Avidyne does not provide a complete list of NOTAMS. Local NOTAMS, most laser light NOTAMS, and any NOTAMS other than restricted airspace are not listed.

By using the Avidyne Services you are able to access information made available from a variety of sources. Avidyne does not control, edit or review the content of such information and is not responsible for such information or the actions or conduct of any company that provides sources of weather data procured by Avidyne. Therefore, although Avidyne uses diligent efforts to provide Services of high quality, ALL SERVICES AND WEATHER DATA ARE PROVIDED AS-IS and neither Avidyne nor its suppliers, subcontractors, information sources or developers (collectively called "Suppliers") are responsible for: 1) the accuracy, completeness, timeliness, reliability, content, or availability of the Services or any information accessed; 2) loss or damage to your records or data; or 3) your use of, or results achieved from, the Services or any information accessed.

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1   Introduction

The Envision EX5000 Multi-Function Display (MFD) provides a moving map view of your flight plan, a broadcast datalink weather, lightning, traffic, navigation data, obstacles, terrain, and CMax™ approach plates with an intuitive user interface. The EX5000 offers the following standard and optional features:

● Lightning information display from a WX-500 or an Avidyne TWX-670 lightning sensor, if installed.

● Full ARINC-429 databus capability, allowing the EX5000 to display curved flight paths, procedure turns, and holding patterns from a compatible GPS navigator.

● Traffic information display from Avidyne TAS600 Series, L-3 Skywatch, Garmin TIS, Garmin GTX345 or any compliant ADS-B traffic system.

● Terminal procedure chart display using the CMax™ function.

● Display of weather and flight restriction information when interfaced with an external Broadcast Datalink receiver or internal Narrowcast Datalink receiver.

● Display of TAWS terrain information when interfaced with an installed EGPWS system.

Note: Consult the Flight Manual Supplement (FMS) provided with the aircraft and/or sensors prior to operation. The FMS contains information specific to your installation and may contain operating limitations applicable to your aircraft configuration.

1.1 Using the Envision EX5000 MFD

Figure 1.1 Envision EX5000 MFD

The controls on the bezel of the Envision EX5000 are placed to allow you quick and intuitive access to the information you need, when you need it.

1) **PhotoCell Light Sensor**—Automatically compensates display brightness for varying lighting conditions.

2) **Brightness Control**—Allows you to override the default display brightness and adjust the brightness level. Press the top button to brighten the display; press the bottom button to dim it.

3) **Data Port**—Provides a front panel access point for loading database updates.

> **Note:** When removing the rubber cap from the data port, pull the cap gently **from the top** until it pops out. Make sure the cap is out of the way (but not removed) before plugging anything into the USB port.
>
> Do not tug on the tab at the bottom of the cap; this can cause the loss of the protective cap.

4) **Buttons**—Used to select modes or change the display as indicated. Buttons are active when a label appears on the screen adjacent to the key.

5) **Page Control knob**—The left knob provides quick access to the main EX5000 pages, including the Map page, Trip page, and Aux page, as well as the main pages for any optional features. The current page is highlighted in the page Bar on the lower left corner of screen.

6) **Selection & Range Control knob**—Depending on the page you are viewing, the right knob controls functions such as selecting items on the page or changing the view range. The label on right knob changes as appropriate.

7) **Message Bar**—The message bar keeps you informed about critical as well as routine information from the EX5000. When information needs to be conveyed the message bar appears next to the bottom right button.

> **Note**: The message bar displays one message at a time. If more than one message is available, the message bar will display the highest priority message first. Press the ACK button to clear the current message and view those underneath.

1.2 Power Up

On power up, the system performs a brief hardware self-test, then initializes its functions systematically. After initialization (about a minute after power-on), the title page, with database currency information, is displayed. Check to ensure that you do not have any expired databases before continuing.

When the EX5000 is ready the, "Press any bezel key to continue," message is displayed.
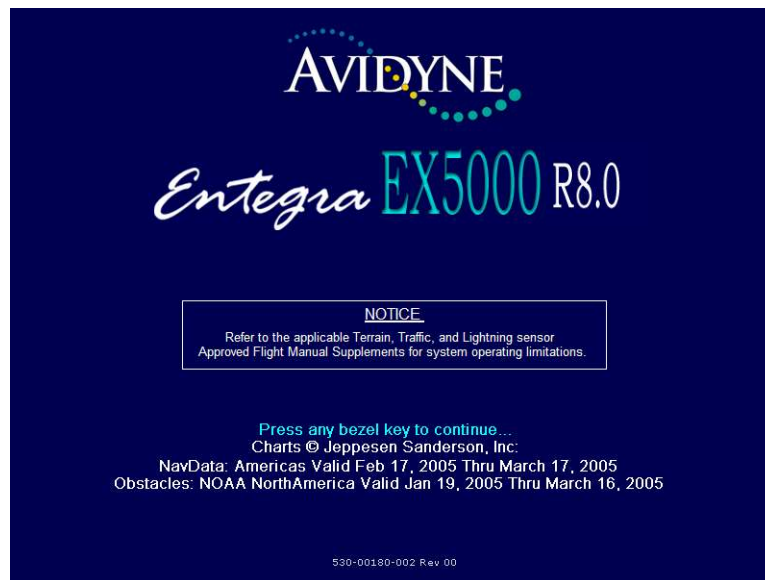
Figure 1.2 Envision EX5000 Initialization Page

The EX5000 Startup page reports the valid dates for the currently loaded CMax™ chart data and NavData. Check to ensure that you do not have any expired databases before continuing.

For CMax data:

● If the issue date for the next update has passed, the Startup page displays, "Update Available," in white.

● If the current date is more than a week past the issue of the next update, the message, "Update Required," is displayed in yellow cautionary text.

● If CMax is more than 10 weeks out of date, access to the charts is revoked until new CMax data is loaded.

For NavData, the date range is displayed if the data is valid; if it is not valid, the word, "EXPIRED," and the expiration data are displayed in yellow.

For more information about updating CMax and NavData, see Section 9.1, "Updating Your Databases" on page 88.

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2   Map Page

The Map page displays your current flight plan overlaying a map of the area over which you are flying. The EX5000 allows you to select the data you want to display on the Map page.

Turn the *Select* knob on the Page Bar to Map to display the Map page.

This section discusses the following topics:

2.1 Map Page—Controls

Buttons on the left side of the bezel provide access to sensor modes and pages. Buttons on the right side of the bezel access the mapping functions, and control how the Map is viewed.

Figure 2.1 Map Page Controls

> **Note:** For information about the Map Symbols, see Section 9.5, "Map Symbols" on page 99.

1) **Sensor Functions**—Control overlay and modes of available sensors. Buttons are only displayed for the sensors installed in your aircraft:

   ■ **Traffic—**Cycles through traffic sensor modes.See Chapter 4 "Traffic Mode and the Traffic Page ," for more information on traffic modes.

   ■ **Lightning** - Controls the display of lightning strikes or cells (cells for WX-500 only) on the map (when interfaced with an Avidyne TWX670, an L3 WX-500 Stormscope, or a satellite-

weather Broadcast Datalink receiver). For instructions on using the L3 WX-500 Stormscope, see that manufacturer's documentation. For TWX670 cell information, see the **WxOvly** key > **TWXCELL** selection.

Note: The TWX670 can accurately display lightning strikes in all selectable ranges, including within 25 NM.

Note: **(WX-500 only**) The lightning sensor maps thunderstorm activity by monitoring electrical discharge activity within a 200-mile radius of the aircraft. The WX500 does not accurately display lightning in ranges less than 25 NM. It can show lightning less than 25 NM, but the accuracy is not suitable to zoom in on. Display ranges greater than 25NM accurately display lightning strikes outside the 25 NM radius.

Only one mode can be displayed on the EX5000 MFD at any time. The EX5000 provides scalable support for a number of different weather sensors so you can use the MFD to get the best view of hazardous weather and options to avoid it.

◆ **Datalink** - Displays lightning strikes obtained from the Datalink weather service, depending on the weather service and subscription level. Lightning strikes are represented by lightning bolts in white, yellow or dark yellow, depending on the age of the strike.

◆ **Strike** - Displays lightning strikes obtained from the lightning sensor. Lightning strikes are displayed as follows:

  ◆ WX-500 lightning strikes are displayed as yellow X's.

  ◆ TWX670 lightning strikes are displayed as X's. Strike intensity is indicated using 5 colors from red to green-yellow. A strike displayed in red indicates an area of very high intensity, while a strike displayed in green-yellow indicates an area of low-to-moderate intensity.

Note: When strikes are selected to display along with TWX cell data, the strike colors change to white to improve visibility against the colored cells.

◆ **Cell** - Displays storm cells using cell data obtained from a WX-500 stormscope. Each lightning strike is displayed as a yellow '+' sign, and clumps of strikes indicate the cell and cell intensity.

◆ **Display Off** - Turns display of lightning information off.

■ **Clear Strikes**—Removes current lightning symbols to allow for the refresh of lightning data when using a onboard lightning sensor. Does not remove Datalink lightning.

■ **WX Rpts**—Controls the type of Datalink weather information displayed on the map, as follows:

◆ **All**—Displays graphical METARs, AIRMETs, and SIGMETs.

◆ **METARS**—Displays graphical METARs only.

◆ **AIRMET**—Displays graphical AIRMETs only.

◆ **SIGMET**—Displays graphical SIGMETs only.

◆ **DSPLY OFF**—Turns off display of all weather information.

For more information about Datalink functions, see Section 8, "Datalink (Optional)" on page 79.

2) **Map Functions**—Controls basic look of the map in terms of orientation, number of elements, and base map.

■ **View**—Orients the map for either Track/Heading Up or North Up. FORWARD and CENTER views are oriented with Track/ Heading Up. North Up orients the map to true North, with the ownship symbol rotated to show track/heading.

◆ **Forward** - 120° view with airplane's present position displayed at the bottom. Current heading (or track) is displayed at the top of the map.

◆ **Center** - 360° view with airplane's present position displayed at the center of the compass range ring with current heading (or track) at the top of map.

◆ **North up** - 360° view with airplane's present position displayed at the center, and north is always at the top of the map.

■ **Declutter**—Controls the four levels of navigation database detail on the Map from most to least:

■ **Base Map**—Controls the base map layers:

◆ **TERRAIN**—Color-contoured terrain, bodies of water, and political boundaries.

◆ **BASE**—Bodies of water and Political boundaries

◆ **NONE**—No base map

■ **Wx Ovly** - Weather Overlay controls the type of weather information displayed on the map. Press Wx Ovly to cycle through the display options:

◆ **US**, **CAN or LOC RDR** - If Broadcast Datalink is installed and available, the single down arrow displays basic Datalink RADAR information on the map. Storm cell movement is not displayed. The external Broadcast Datalink receiver receives a constant stream of weather data for the entire United States via a satellite radio system. US RDR displays CONUS weather. CAN RDR displays Canadian weather. LOC RDR displays regional radar for ADS-B configurations

◆ **US RDR+** - If Broadcast Datalink is installed and available (depending on your Datalink service level), the single down arrow and plus sign displays full Datalink RADAR for CONUS, including storm cells.

For many operations, the EX5000 displays weather data in the same way, regardless of which Datalink system is in use. Both systems provide datalink radar data—a composite image depicting precipitation as seen by multiple ground-based weather radar sites. The image is color-coded to show intensity levels and precipitation types. Broadcast Datalink, however, especially at a

higher service level, provides more data (such as storm cell movement and Datalink lightning).

> For Datalink RADAR, small areas of high-intensity datalink radar data might not be displayed on the EX5000 at high range settings. Instead, larger areas of surrounding lower-intensity returns might obstruct indications of severe precipitation at Map ranges higher than 250 nm. Avoid using Map ranges greater than 250 nm when RADAR echoes are shown in the vicinity of the aircraft.

◆ **TWXCELL** - If Wx Ovly is set to TWXCELL, the EX5000 displays thunderstorm cells detected by the TWX670, using colors (Table 2.1) to indicate levels of storm intensity. For example, Figure 2.2 shows an aircraft located at the edge of intense thunderstorm activity. In this instance, the aircraft must be flown away from the thunderstorm. The TWX670 detects and measures lightning strike energy and generates cell data that the EX5000 displays in

color. This mode shows dangerous convective areas that you must avoid.

Figure 2.2 TWXCELL Mode Display

Note: If cells appear in the same location as navaids, obstacles, or TFRs, the cells will cover part or all of the navaids, obstacles, or TFRs. To more clearly view the navaids, obstacles, or TFRs, turn off the TWXCELL mode by pressing WxOvly and selecting DSPLY OFF or one of the other options. When desired, you can switch back to CELLMODE to see the storm cells.

The TWX670 sensor outputs hexagons of varying widths from 0.5 NM to 10.0 NM. Occasionally, as the MFD display is zoomed, you may notice that the hexagon size changes abruptly. This is normal as the MFD consistently uses the highest fidelity TWX lightning data available.

Table 2.1 describes the colors displayed by the EX5000.

Table 2.1Thunderstorm Activity (Cell) Colors

Color	Interpretation
Red	Intense thunderstorm activity - presence of hazardous atmospheric conditions is certain.
Orange	Weather conditions are approaching intense thunderstorm activity.
Orange-Yellow	Heavy thunderstorm activity - high likelihood of hazardous atmospheric conditions.
Yellow	Weather conditions are approaching heavy thunderstorm activity.
Green-Yellow	Moderate thunderstorm activity - severe turbulence and unsettled atmospheric conditions likely.
Green	Weather conditions are approaching moderate thunderstorm activity.

Color representing less intense thunderstorms does not imply that it is acceptable or safe to fly in those areas. **Always avoid areas of indicated thunderstorm activity, regardless of color displayed.**

The TWX670 detects thunderstorm cell activity up to a 200 nm range. The range control on the EX5000 enables you to zoom in or out to see the distribution of convective activity.

If both datalink weather and TWX670 are installed in the aircraft, you can use both to determine the best course of action to avoid dangerous weather.

◆ **RADAR** - Displays on-board weather radar returns on the map. This choice does not appear if the EX5000 is not configured with an aircraft heading source, or if aircraft heading is currently unavailable.

◆ **DSPLY OFF** - Removes all onboard and datalink radar data from the map display.

Note: The boundary of the available datalink radar data is shown by an area with gray diagonal stripes. If datalink radar is unavailable in a particular area, hatched lines appear in that area.

3) Range Control knob—The right knob controls the map's range and allows you to set the scale from 1NM out to 1500NM. The selectable ranges are, in nautical miles, 1, 2, 5, 10, 15, 20, 30, 40, 50, 75, 100, 150, 200, 300, 400, 500, 750, 1000, and 1500.

Note: The terrain base map is automatically removed and Nav database information is fully decluttered at 750NM and higher ranges.

Note: The Map page monitors the "health" of the sensors (traffic and lightning) by means of a signal pulse. Map looks for a signal every three seconds from each sensor. If it doesn't see this signal it assumes the sensor has failed in some way. When this happens, the following occurs on the display:

- Sensor data is removed from the overlay display.
- The word "FAIL" displays in the sensor's status line in yellow.
- The sensor symbol changes from cyan to yellow (if the sensor was on).

What to do:

Select the Setup page and perform Self-Test for the applicable sensor.

2.2 Map Symbols—Terrain and Position

The Map page depicts your aircraft's position in relation to your flight plan, nearby airports, terrain, traffic, lightning, special use airspace and other navaids.

Note: For information about the Map Symbols, see Section 9.5, "Map Symbols" on page 99.

Figure 2.3 Map Symbols–Terrain and Position

1) **Data Blocks (Left & Right)**—View navigation data in data blocks in the upper corners of the display. For more information, see Section 7.3, "Data Block Edit Page" on page 73.

2) **Sensor Status Box—**Displays the status of the available sensors including radar, traffic, lightning and both 2-Way Datalink and Broadcast Datalink. The Datalink Radar display includes the Datalink Radar data age, which is the elapsed time since the product was created by the weather provider. See Table
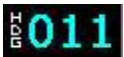
9.1 Sensor Status Block Symbols on page 97 for more information on status box symbols.

> Datalink Radar is the only Broadcast Datalink product on the EX5000 that displays the time since the product was created by the weather provider. Refer to the Trip page for information on all other weather products. When using Datalink weather, monitor the data age so you are aware of the time elapsed since the last weather update.

3) **Special Use Airspace**—The EX5000 uses several different line styles to convey special use and class airspaces. Class B is solid blue line, Class C is solid magenta line. Class D is dashed blue line, MOA, Warning, and Alert areas are solid yellow lines, and restricted and prohibited areas are solid red lines. See Table 9.7 Airspace and Airways Lines on page 101.

4) **Heading/Track Indicator**—Three triangles around the compass rose provide actual track, desired track, and heading indications. The H/T Block provides digital readout of the current heading, or actual track. Map orientation is indicated in the triangle to the right of the H/T Block.

Table 2.2   Track Indicator Graphics

Heading		Track		Map Orientation	
011	Heading	▼	Desired Track	▲N	North Up
193	Track	▲	Heading	▲H	Heading Up
		▲	Actual Track	▲T	Track Up

5) **Terrain Scale**—Shows highest and lowest limits of terrain in displayed area. Legend colors in between these numerics represent terrain elevations. Blue obstacle clearance number shows the top of the highest obstacle, when greater than the

highest displayed terrain. Terrain data is not displayed when your aircraft's latitude is greater than 75 degrees (north or south).

> ⚠️ The displayed terrain and obstacle indicators are only advisory. It is dangerous to rely on the EX5000 as the sole source of obstacle and terrain avoidance information. Always refer to current aeronautical charts for appropriate terrain and obstacle information.

6) **Obstacles**—The EX5000's database contains towers and other obstacles greater than 200 feet AGL. Obstacles can be displayed with MSL altitude label.

Note: For example, a 2000 foot tall TV tower located in Denver (elevation 5300 feet MSL) will be depicted as being at 7300 feet MSL.

Table 2.3   Obstacle

Graphic	Meaning	Height (AGL)
🔺	Single Obstacle	200' AGL to < 1000' AGL
🔺🔺	Obstacles within 1NM of each other	200' AGL to < 1000' AGL
🔺	Single Obstacle	1000' AGL or higher
🔺🔺	Obstacles within 1NM of each other	1000' AGL or higher

7) **Compass Rose/Range Ring**—Displays a 360-degree or 120-degree compass circle or arc and also indicates current range setting. The range number is the distance from the airplane symbol to the compass arc.

2.3 Map Symbols—Runways and Flight Plan

When looking at the Map page in short range, you can see details, such as runway diagrams, that are not available at longer ranges. Note that your flight plan is always shown.
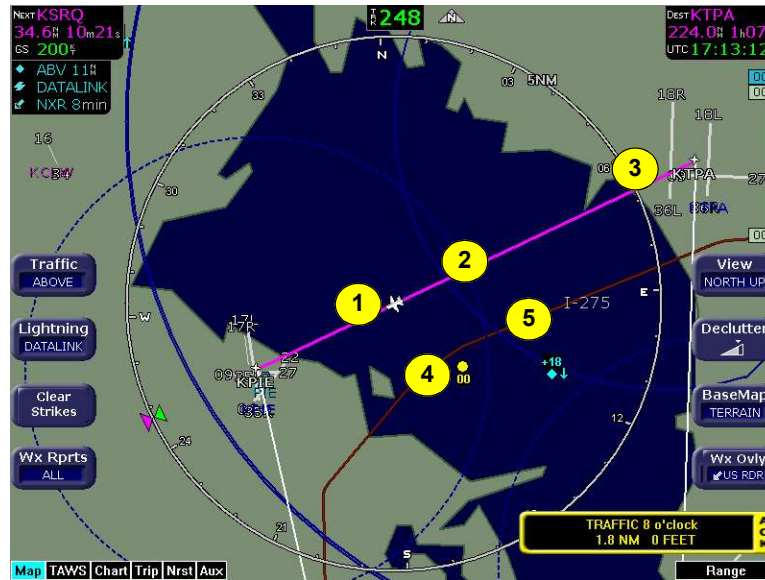
Figure 2.4 Map Symbols—Runways and Flight Plan

1) **Ownship Symbol**—Shows the position of your aircraft in relation to the moving map and the selected view.

2) **Flight Plan**—Displays the active flight plan from the GPS. The current leg displays in magenta and all remaining legs are shown in white. When you select an approach procedure on the Garmin 430, all approach segments including holds, DME arcs, procedure turns, etc., are shown (when connected via the ARINC 429 bus).

> **Note**: For most GPS units, the EX5000 does not display the active course leg when you are adjusting the desired track in OBS mode. The desired track leg will be displayed after you finish selecting the course and exit the OBS mode of the GPS.

> **Note**: The Garmin GNS 430/GNC 420 does not differentiate curved flight path segments from straight segments when interfaced with the EX5000 via an RS232 interface. Therefore, the EX5000 will connect the beginning and end waypoints of a curved segment, such as a DME arc, with a straight line. Under these circumstances, the straight line must be ignored. Approach procedures should be flown using the GNS 430/GNC 420 navigator's CDI as the primary reference. Consult your avionics installation facility to determine if your EX5000 is interfaced to the GNS 430/GNC420 via ARINC 429 or RS232.

> **Note**: The Garmin 400W/500W can use the parallel track. For Garmin 400W/500W software at Release 2 or earlier, if a parallel track is active, the current non-offset leg will be displayed in white. For Garmin 400W/ 500W software at Release 3 or later, if a parallel track is active, the parallel track leg will be displayed in white.

3) **Airport Runway Diagrams**—Displays runway layouts of nearby airports when looking at the map at a less than 5NM range. As you range in, the scaled runway diagram with heading labels shows your exact location in proximity to the field.

4) **Traffic Indications**—Shows traffic symbol relative to current position and includes relative altitude (when available) with respect to airplane symbol. See your traffic sensor User's Manual for further details. When available, TIS installations will show a ground track "stinger" for each intruder, indicating the intruder's track as measured by ground radar. Traffic Symbols are shown in Table 4.1 Traffic Symbols on page 50.

5) **Interstate Highways**—Depicted as brown lines when terrain is selected to be shown. Interstates are labeled in white. (e.g. I-95). Highways are removed from the terrain map when the range is greater than 300NM.

2.4   Map Orientation Control

The Map View button allows you to control the orientation of the map and sensor data displayed on the EX5000. EX5000 traffic and lightning sensor symbols are positioned relative to the aircraft nose. When the Map View is North-Up you need to pay more attention to locate traffic outside the aircraft. Set Map View to Center or Forward to display this data consistent with typical dedicated traffic and lightning sensor displays.

2.5 Errors Displayed on the Map Page

In general, the following errors are generated externally to the MFD, but you may notice them on the Map or other pages within FlightMax.

2.5.1 Loss of GPS Input

Loss of primary GPS is annunciated in a number of ways on your EX5000.

- The "Nav Source not communicating" message displays.

- The aircraft symbol is removed.

- There is no heading information displayed (if GPS is lost, no heading is displayed regardless of heading source).

- The desired track icon is removed from the compass rose.

- There is no groundspeed information displayed.

The EX5000 continues to provide Datalink weather for your flight at its last known position. If the primary GPS fails during flight and you have a second GPS connected to the EX5000, you may switch your GPS input to the backup source by pressing the Nav Src button on the Aux page.

2.5.2 Loss of Heading Input

The source for heading data on your aircraft is dependent upon the particular complement of equipment you have installed in your aircraft. Loss of heading is typically associated with the failure of one of the following:

- The WX-500 Stormscope system (if installed and a heading source is connected to the WX-500).

- The Skywatch system (if installed and a heading source is connected to the TAS).

- A problem with heading from a Primary Flight Display (PFD).

- The GPS (This would be a pass through of the heading from another source, such as an Avidyne PFD. The GPS does not determine heading).

If an installed heading source becomes unavailable or invalid, the EX5000 will automatically switch to using GPS track for map alignment.

Map Page

If the track source also becomes unavailable or invalid, the following conditions will occur:

● All traffic and lightning data is removed from the display.

● The aircraft symbol is replaced by a direction-less symbol (a white + symbol).

● The compass labels (N,S, E, and W) are removed from the display.

● The map and flight plan data will continue to be displayed.

● The map orientation annunciation is removed from the display.

● The heading/track indicator will display a series of dashes ("---")

● The map is oriented True North Up.

What to do:

● Have the avionics wiring inspected.

When heading/track is restored, Map will resume normal operations.

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Map Page

3   CMax Chart Pages (Optional)

CMax™ is an optional Avidyne feature that allows you to view Jeppesen Terminal Procedure charts on your EX5000. If CMax is installed on your aircraft, you can select Charts from the Page Bar to view the CMax charts. This section discusses the following topics:

- *Not for Navigation Watermark on Chart display*, page 26

- *About Geo-Referenced Charts*, page 28

- *CMax Chart Page*, page 28

- *4.2 European VFR Charts*, page 33

- *CMax Selection Page*, page 39

> ⚠ As pilot in command, it is your duty to have alternate sources of approach data available to you. Do not rely upon CMAX charts as your sole source of navigation information.

> ⚠ It is critical that you update the Jeppesen database regularly and prior to conducting flight operations to insure accurate data. **Use of an outdated database is entirely at your own risk.**

3.1   Expired Charts

CMaxTM charts are valid for a period of 56 days. Charts will be displayed normally for 10 weeks after the chart expiration date.

After 10 weeks from the chart expiration date, charts will display a "NOT FOR NAVIGATION" watermark. The Ownship symbol and flight plan legs are removed from charts that cannot be used for navigation.
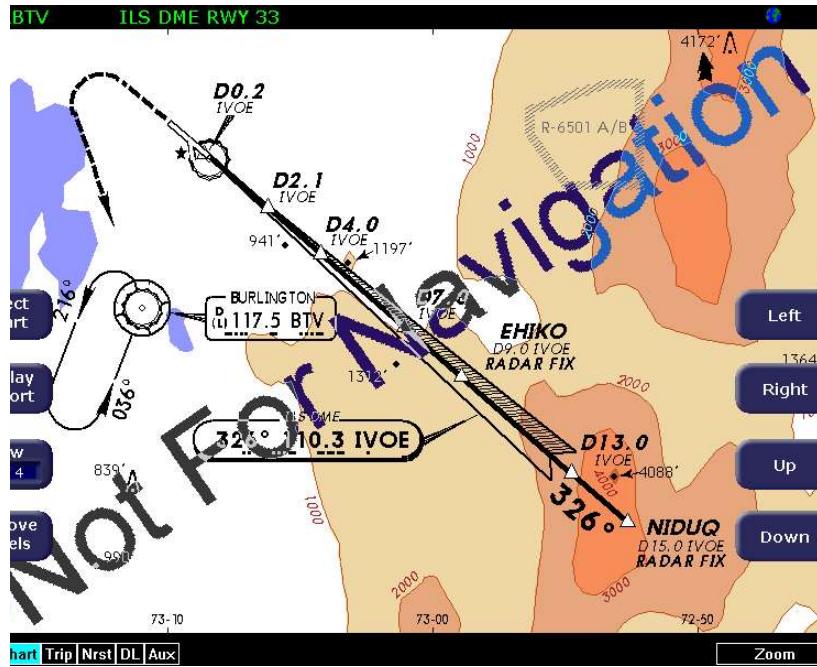
Figure 3.1 Not for Navigation Watermark on Chart display

3.2 About CMax

CMax charts include instrument approach procedures, arrivals, departures, airport diagrams, and various taxiway and airspace diagrams typical of Jeppesen printed charts. CMax requires that you have a valid chart data subscription from Jeppesen Sanderson, Inc. For information on obtaining a CMax subscription, see the *Avidyne Data Update Guide* or the Jeppesen website at www.jeppesen.com.

The *Data Update Guide* also contains instructions for loading the chart data to your Zip Drive or USB Flash Memory Drive. See Section 9.1, "Updating Your Databases" on page 88 for information about loading CMax Data onto your EX5000.

Note: You can load new CMax Chart data into the MFD as soon as you receive each data cycle. Any charts that have changes that are effective on a certain date are controlled within the data. The MFD will display the proper Chart data based on the current date and the effective date of the changes to the chart.

3.3 About Geo-Referenced Charts

The greatest additions to situational awareness come from charts that are geo-referenced. A chart is geo-referenced when the chart data supports a correlation of chart position to actual latitude and longitude coordinates. This allows an ownship symbol and flight plan legs to be accurately represented on the chart. If a chart is not geo-referenced, the ownship and flight plan legs cannot be drawn on the chart. Most Jeppesen approach charts and airport diagrams are geo-referenced; most arrival, departure, and miscellaneous charts are not.

3.4 CMax Chart Page

The CMax function is found on the EX5000 as the Chart page, listed in the Page Selector bar if CMax is enabled on your EX5000. The Chart page is capable of having two charts ready for viewing at any one time: an airport diagram, and a procedure chart (or other miscellaneous chart associated with that airport). The airport and associated charts are selected on the Chart Selection page, described in Section 3.7, "CMax Selection Page" on page 39.

The EX5000 Startup page reports the valid dates for the currently loaded chart data. If the date for the next update has passed, the Startup page will report this in yellow cautionary text. If the chart data becomes more than 10 weeks out of date, access to the charts shall be revoked until new chart data is loaded.

On power up, if your EX5000 is receiving a valid position from your GPS unit, the Chart page will default to display the airport diagram of your current position. An approach procedure chart will not be displayed until one is selected. If no valid GPS position is available at start-up, the Chart page will default to the Chart Selection page for manual selection of a chart.

If you select the Chart page immediately upon power up, CMax may still be initializing and will display the following message: "CMax Initializing/Please Wait." The Chart page will begin normal operation when initialization completes.

On landing, if the Chart page is being displayed, the EX5000 will automatically switch to display the Airport diagram for the current location when the GPS Ground Speed drops below 50 knots.

The Chart page shows the airport diagram of the current airport, with ownship symbol for current aircraft position, if the airport diagram is geo-referenced.
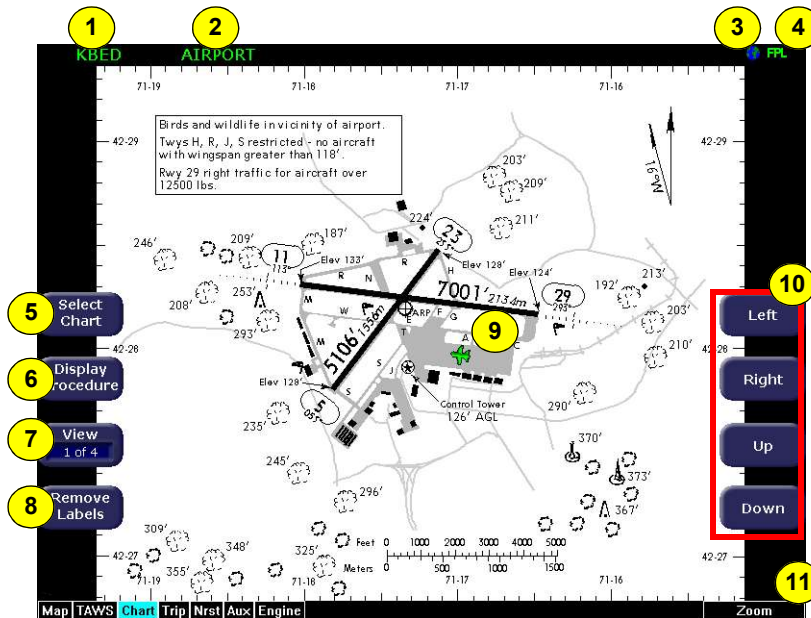
Figure 3.2 CMax Chart Page (Airport)

1) **Airport Identifier**—The airport identifier for the current airport displays in green.

2) **Chart Name**—The name of the current chart being displayed, also in green.

3) **Geo-referenced Symbol**—When the displayed chart is geo-referenced, a small globe displays. If the chart is not geo-referenced, the globe symbol is crossed out.

4) **Flight Plan Symbol**—an FPL symbol indicates the option to display the current flight plan is turned on. If the display of flight plan is turned off, the FPL symbol is crossed out. Note that if a chart is not geo-referenced or no flight plan is received from the GPS, the flight plan cannot be displayed even if the option is selected.

5) **Select Chart**—Displays the Selection page to allow you to select a new chart for display. For more information, see Section 3.7, "CMax Selection Page" on page 39.

6) **Display**—*Display* allows you to toggle between displaying Airport and Procedure charts.

   ■ *Display Airport* shows when the current Procedure chart displays. Press *Display Airport* to display the Airport chart.

   ■ *Display Procedure* shows when the current Airport chart displays. Press *Display Procedure* to display the Procedure chart.

7) **View**—Controls which portion of the chart is being displayed. See details below.

8) **Remove Labels**—Removes the button labels from the page to allow a full view of the current chart. Press any button again to redisplay the labels.

9) **Ownship**—Displays the current position of the aircraft. The chart nominally remains fixed and the ownship symbol moves across the chart with aircraft movement.

10) **Pan Buttons**—The right-hand buttons allow you to manually move the chart on the screen. The pan buttons are only active when the current view can be panned. The Plan view of each chart can generally be panned; many information pages, such as header and departure views, cannot.

    Not shown: Center—When you use *Pan*, the *Center* button is displayed to allow you to re-center the chart. When panning, the aircraft position, and ownship symbol, may move towards or off the edges of the chart area. Press *Center* to re-center the chart on the current position hide the *Center* button.

11) **Zoom Control knob**—The right knob allows you to zoom the chart for close-up examination of a specific area. The label only appears when the current view can be zoomed. Most information view pages, such as headers, cannot be zoomed. If you have panned the chart, zooming all the way out to the full-screen chart size also re-centers the chart on the screen.

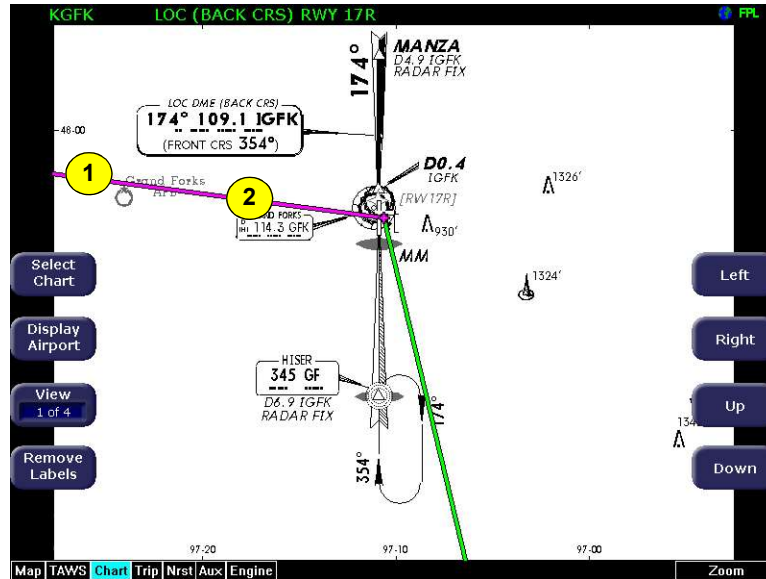A typical approach procedure chart is shown in Figure 3.3:

Figure 3.3 CMax Chart Page (Procedure)

1) **Flight Plan**—The flight plan is overlaid on the Plan View when you select the flight plan display option (on Selection page) and the chart is geo-referenced. If a flight plan does not display, check that you selected the correct airport and approach.

2) **Flight Plan Active Leg**—The active leg of the current flight plan, if displayed, is magenta. Non-active legs are shown in green.

> **Note**: The Garmin 400W/500W can use the parallel track. For Garmin 400W/500W software at Release 2 or earlier, if a parallel track is active, the current non-offset leg will be displayed in white. For Garmin 400W/500W software at Release 3 or later, if a parallel track is active, the parallel track leg will be displayed in white.

> **Note**: The ownship symbol on the Chart page is always oriented according to the current GPS ground track. Therefore, the ownship is always pointed in the direction the aircraft is moving, and does not show any crab angle induced by crosswind components.

CMax Chart Pages (Optional)

Note: For a flight plan to be displayed on a given chart there must be a waypoint on that chart in the flight plan. For example, a direct flight plan from KBED to KLAX passes over KEMT. If you bring up KEMT charts, the KBED-KLAX flight plan will not display. To display the flight plan over KEMT, a waypoint on an approach for KEMT must be included in the flight plan.

3.5 4.2European VFR Charts

European VFR Charts can be included in the CMax subscription from Jeppesen. If loaded, these European VFR Charts can be accessed like standard CMax charts. JSUM version 2.1.5 or later must be used to download European VFR Charts.

1) **VFR Charts**-If loaded, VFR charts will be listed first in the list of CMax charts for a given airport.

2) **IFR Charts-**If loaded, standard CMax IFR charts will appear second on the CMax Selection Page below European VFR charts.

If a VFR chart is selected pressing "Display Airport" will display the VFR airport diagram. Likewise, if an IFR chart is selected, pressing "Display Airport" will display the standard Jeppesen airport diagram.

CMax Chart Pages (Optional)

3.6 CMax Views

The EX5000 provides two sets of charts, Procedure and Airport. For ease of use and readability, each chart is divided into sections that are shown individually. Use the *Display* button to toggle between Procedure charts and Airport charts. Press *View* to cycle through the available views for that chart.

> **Note:** If CMax detects non-standard data for a particular chart, a full chart view will be the only available view for that chart, and the geo-referenced ownship and flight plan will not be displayed.

3.6.1   Procedure Chart Views

For the Procedure chart, the Header, Profile, and Minimums views also feature a small "preview pane" of the Plan View, which, although too small to read all chart details, gives the user a general overview of the approach for situational awareness. The flight plan and ownship symbol are also displayed on the preview pane.

The available views are:

Table 3.1   Airport Procedure Views

#	View	Description
1 of 4	Plan	Includes a flight plan overlay if available (shown in Figure 3.3).
2 of 4	Header	Contains general chart information and appropriate communication frequencies.
3 of 4	Profile	Includes the profile view of the approach procedure.
4 of 4	Minimums	Shows the descent minimums for the approach.

Header View
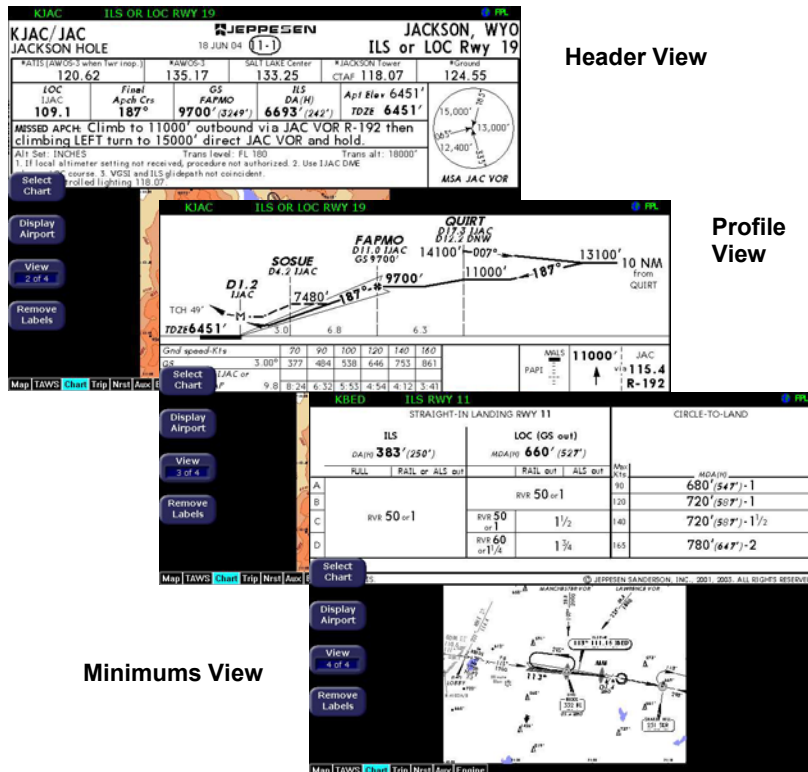
Profile View

Minimums View

Figure 3.4 Procedure Chart views

3.6.2   Airport Chart Views

For airport charts, the available views are as follows:

Table 3.2   Airport Chart Views

#	Chart	Description
1 of 4	Plan	Includes a flight plan overlay, if available (shown in Figure 3.2).
2 of 4	Header	Includes general chart information and communications frequencies.
3 of 4	Runways	Shows runway information for the airport.
4 of 4	Departure	Displays specific departure procedure information.

Header View

Runways View
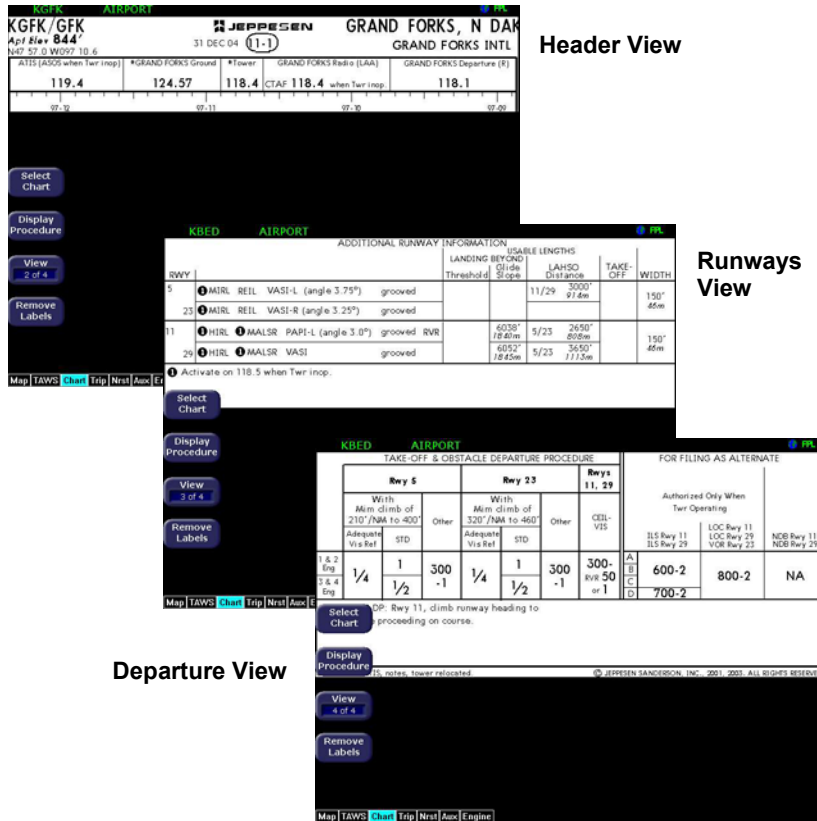
Departure View

Figure 3.5 Airport Chart Views

Note that not all charts will have all information sections. Airport charts, for example, may or may not have runway or departure information. For larger airports, this information is often large enough to warrant a separate chart, which can be selected from list on the Selection page.

Charts that cannot be split into smaller sections are shown as a complete chart, with the View button not displayed, since only one View type is available.
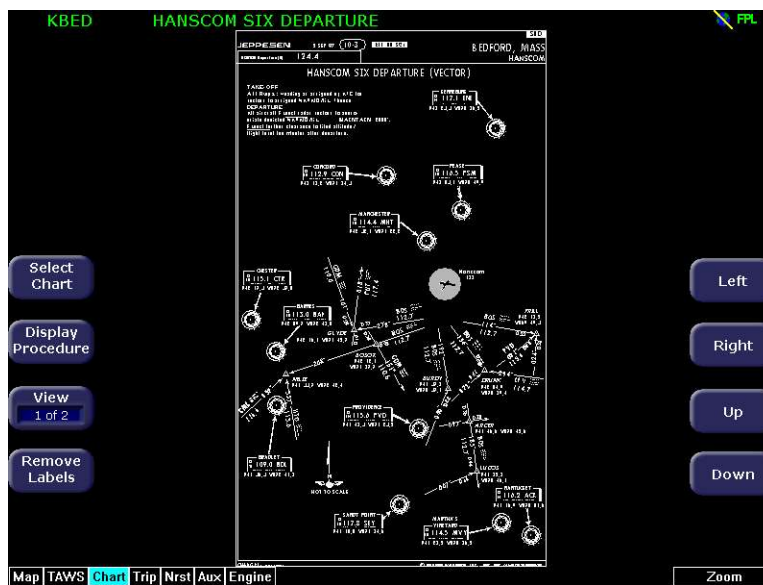

Figure 3.6 Airport Departure Chart (Night View)
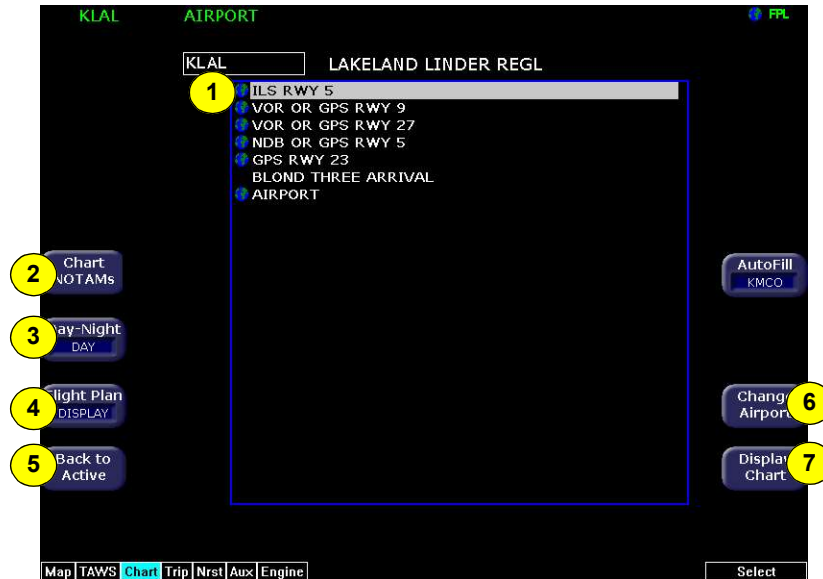
3.7 CMax Selection Page

Figure 3.7 CMax Selection Page

1) **Chart Selection list**—A list of all charts available for the identified airport. Although the majority of charts listed are indeed instrument approach procedure charts and are generally referred to in this documentation as procedures, the list also includes other types of charts such as airspace diagrams, taxi diagrams, special instructions, and other miscellaneous charts.

> **Note**: The EX5000 shows only those charts covered by your Chart data subscription. The Charts are listed in the Jeppesen chart index order.

2) **Chart NOTAMs**—The *Chart NOTAMs* button only displays if chart NOTAMs exist for the currently-selected airport. Press *Chart NOTAMS* to bring up a window that lists any associated chart NOTAMs for the airport currently entered in the Airport Entry Field. See Section 3.8.1, "Chart NOTAMs Page" on page 43 for more information.

3) Day/Night—Toggles the chart display between *Day* and *Night* modes. Day mode displays black text on a white background; Night mode is white text on a black background. Other colors such as water or shaded terrain are also adjusted for Day or Night mode. The EX5000 starts in Night mode to preserve night vision.

4) Flight Plan—Toggles the display of the flight plan overlay on the chart Plan View between DISPLAY and DSPLY OFF. Changes to this selection are effective immediately.

5) Back to Active—Returns to the current active chart display screen. Any inputs to the Airport Entry Field or Chart list are abandoned. Changes to flight plan display status, however, are preserved.

6) Change Airport—Moves the cursor to the Airport Entry field, described in Section 3.8, "Selecting an Airport" on page 41.

7) Display Chart—Loads the selected chart and displays it on the Chart page. Remember that the associated Airport diagram is also automatically made available on the Chart page when a procedure chart is loaded by pressing Display Chart.

Note: As a valid chart, the Airport diagram is listed in the Chart Selection list, however, it is not usually necessary to load the Airport chart, since it is always accessible on the Chart page by pressing the Display Airport button.

3.8 Selecting an Airport

Use the Airport Entry Field to specify the airport you want to view.

Figure 3.8 Airport Selection Page

1) **Airport Entry Field**—This field accepts airport identification codes (such as KCAD, etc.). The EX5000 will try to auto-complete an airport entry as the first characters are entered. Press the *AutoFill* button to immediately fill this field with the destination airport. Only those airports within the coverage area are auto-completed.

   A list of all charts available for the identified airport appears in the chart list area. The name of the airport in the Airport Entry Field is listed next to the entry field.

2) **AutoFill—**When pressed, moves the detected destination airport listed on the button into the Airport Entry Field.

> **Note**: The AutoFill button automatically detects the destination airport if the final waypoint is an airport or a waypoint that is part of an instrument approach procedure. However, for some approaches, *AutoFill* may detect another nearby airport rather than the intended destination. Make sure the desired airport is displayed before pressing the button. *AutoFill* does not display under the following conditions:
>
> • An Airport cannot be determined due to GPS limitations.
>
> • When the feature is not supported by some GPS models.
>
> • The current airport destination is not available in your chart data coverage area.

3) **Select Chart**—Moves the active selection cursor from the Airport Entry Field to the Chart Selection list.

4) **Next Letter**—Use *Next Letter* to move the cursor within the Airport Entry Field to the next character location.

5) **Select knob**—Use the right knob to select the character for the current cursor position when entering an airport identifier. The character selection scrolls through A to Z, 0 to 9, and common punctuation marks and symbols before returning to A.

3.8.1 Chart NOTAMs Page

Displays the chart NOTAMs associated with the currently displayed airport.
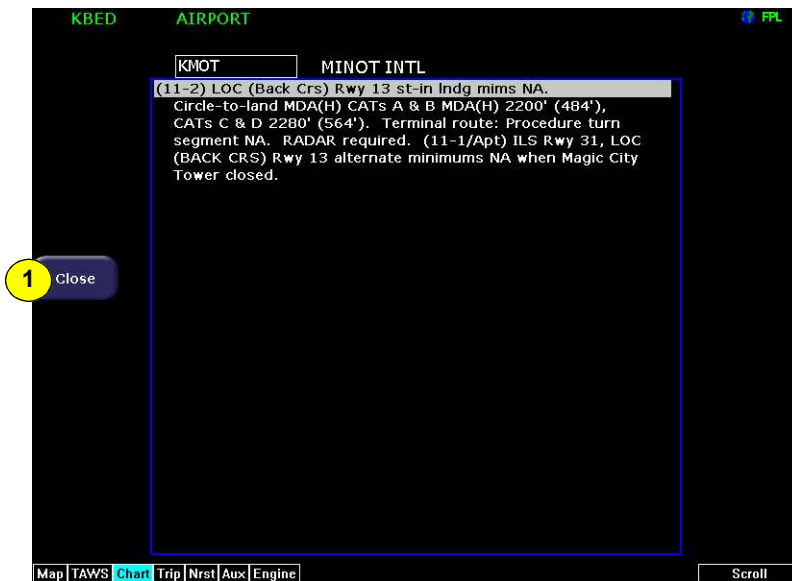

Figure 3.9 Chart NOTAMs Page

1) **Close**—Press *Close* to close the Chart NOTAMs window and return to the Selection page.

Press the *Chart NOTAMs* button from the Selection page to display the chart NOTAMs associated with that airport. Chart NOTAMs specific to that airport are listed first, followed by any general chart NOTAMs.

> **Note**: Chart NOTAMs address changes to information contained on the charts, and do not include local or regional operational NOTAMs. Always obtain local and regional NOTAMS before any flight.

In the unlikely event of data corruption during operations, the EX5000 may exhibit one of the following symptoms:

- EX5000 reports that no chart data is available at all.

- Chart page is not accessible.

- Expected airports are not available for chart selection.

If you observe any of these, reload the CMax chart data using the CMax Dataloader, described in the Avidyne *CMax Data Update Guide* or in the Jeppesen JeppView for MFD *Quick Start Guide*. If problems persist, contact your dealer or Avidyne Technical Support.

As pilot in command, it is your duty to have backup sources of data available.

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CMax Chart Pages (Optional)

4 Traffic Mode and the Traffic Page

When a Traffic Advisory (TA) is reported from the traffic sensor, the EX5000 displays a traffic alert message in the Message Bar. Pressing the ACK button next to the message acknowledges the traffic alert and displays the dedicated traffic page that provides you maximum traffic situational awareness.

> ⚠️ It is dangerous to rely on the EX5000 as your sole source of data for collision avoidance. Traffic information is provided as an aid to visually acquiring traffic. Maneuver your aircraft based only on ATC guidance or positive acquisition of conflicting traffic. It is your duty as pilot in command to see and avoid.

> **Notes**: The intruder track information provided by TIS traffic systems is only accurate to within 45° of true intruder track. Take this into account when visually acquiring the reported traffic.
>
> Keep in mind that intruder traffic can maneuver at any time, and the current intruder track direction does not guarantee the intruder will continue along that track.
>
> For traffic sensors without track information (e.g. TAS), traffic symbols are shown without the "stinger".

4.1 The Dedicated Traffic Page

The dedicated Traffic page is a specially configured Map page with the following settings:

● **View**—Center, with heading (or track) up

● **Range**—5 NM

● **Base Map**—No terrain or political boundaries

● **Declutter**—No symbol or airspace depictions

● **Lightning**—Not displayed

● **Flight Plan**—Displayed

● **Datalink Weather**—Not displayed.

Up to 5 non-bearing intruders (traffic threats reported by the traffic sensor without valid bearing) are listed below the airplane symbol.

Acknowledging the TA message from the Traffic mode removes it from the message bar, allowing other messages to be displayed. The TA message is automatically removed when the threat is reduced or the intruder is no longer present.
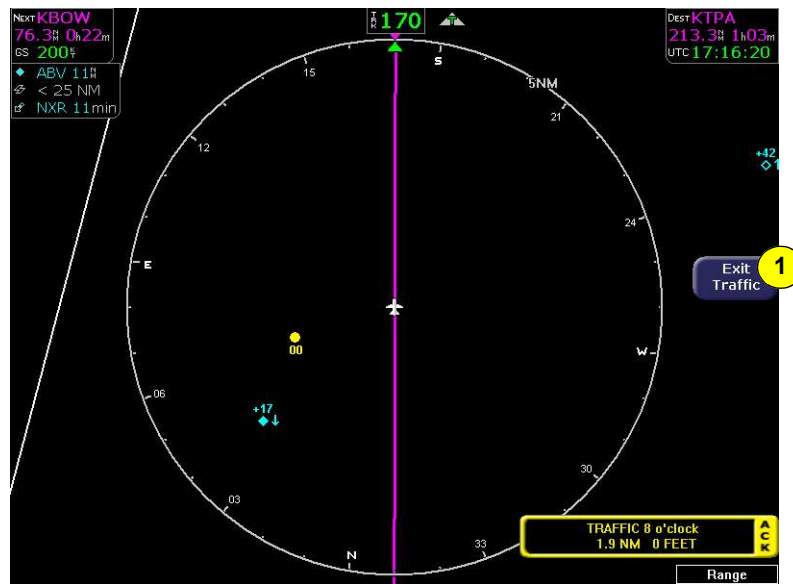

Figure 4.1 Map Page—Traffic Mode

1) Exit Traffic—Restores the Map page to the previous settings. If the Map page is restored prior to acknowledging a TA, the message will remain displayed and acknowledging it will once again bring up the dedicated Traffic page.

> **Note**: Traffic limitations and operational ranges depend on the installed traffic sensor. For TAS or TCAD sensors, see the corresponding sensor Pilot Guide. For TIS sensors, see Section 1-3-5 of the Aeronautical Information Manual.

The available Traffic button modes are listed below. For more information on specific traffic sensor modes, consult the user documentation for your traffic sensor.

The Dedicated Traffic Page

- **TIS**—Traffic modes are DSPLY ON and DSPLY OFF.

- **TCAD 9900B**—Traffic modes are GROUND, TERMINAL, STANDARD, ENROUTE, UNLIMITED, APPROACH, and DSPLY OFF. Note that some TCAD installations will support automatic mode switching by the TCAD unit. The current mode is always reported on the EX5000 screen.

- **All others (ARINC 735 devices)**—Traffic modes are ABOVE, NORMAL, UNLIMTD, BELOW, and DSPLY OFF.

4.2 Traffic Symbols

On the EX5000, aircraft traffic detected by a Traffic Sensor (referred to as intruders) are displayed as one of three symbols. If a compatible TIS system is installed and intruder track information is available, the appropriate symbol will be shown with a "stinger" which depicts the current ground track of the intruder, as detected by ATC radar systems. Traffic symbols are:

Table 4.1   Traffic Symbols

Non-TIS Symbol	TIS Symbol	Type	Meaning
		Traffic Alert (TA)	Traffic within the alert zone defined by the traffic sensor.
		Proximate Traffic	Traffic close to your position but not within an alert zone.
		Other Traffic	Traffic detected by the traffic sensor, but determined not to be a current threat.

> Traffic sensors do not provide any traffic awareness data for aircraft without operating transponders. Therefore, these aircraft will not display on the EX5000. It is your responsibility to see and avoid all other traffic and to maintain appropriate separation.

Traffic alert information is displayed in the message bar as shown in the example above.

1) Relative bearing of target.

2) Range in nautical miles.

3) Relative altitude, for example, -200 would be 200 feet below. For example, -200 would be 200 feet below your aircraft, as reported by the traffic sensor.

Intruders are displayed as they are received from and identified by the sensor. The threat level assigned to an intruder is specified by the sensor when it transmits the intruder data. Threat data, range, bearing, altitude, ID and closing direction are defined by the sensor and the type of sensor used in your system.

If the intruder altitude and vertical speed are known, they are displayed alongside the intruder symbol. The number immediately above or below the traffic symbol indicates the relative altitude of the intruder to your position, in hundreds of feet. An arrow next to an intruder symbol shows the direction of any vertical movement of the intruder that is in excess of 400 feet per minute.

For example, in the Traffic Alert example shown in Table 4.1, the intruder is 500 feet below and is climbing. In addition, this example with an intruder track shows the intruder is moving along a track approximately 45 degrees to the right of our current map alignment. (i.e. if the EX5000 map is set for North Up, the intruder is flying a track somewhere between 023 and 067. This is the accuracy limit of the intruder track data.)

4.3   TIS Sensor Status

For TIS installations, the following may be reported in the Traffic status block on the EX5000 Map page:

● **OPER**—The TIS sensor is operating normally.

● **CST 00:00**—The TIS sensor has temporarily lost the information feed from ground-based radar and is in "coast" mode. The EX5000 will continue to display the traffic last received, while the CST timer will count the seconds since the last valid data.

● **RMV 00:00**—After 12 seconds of coasting, the TIS sensor will remove the traffic display and display RMV, and continue to count the time since the last valid data.

● **UNAVAIL**—More than 60 seconds have passed since valid data was received, or TIS data is not available at the current aircraft location.

● **SBY**—The TIS sensor is in standby mode.

● **DATA FAIL**—The TIS sensor has reported an internal fault.
    Traffic information will be removed from display.

5   Trip Page

The Trip page is continuously updated during flight. The distance and the time values are updated with each new positive fix from the GPS. The route legs advance with each waypoint message. Turn the Page knob to bring up the Trip page, which shows the remaining legs in the current flight plan and other data being received by the EX5000 from the GPS.

If the entire flight plan does not fit on the screen, an ellipsis (...) displays in the next to last line. The destination line is always displayed. All flight plans are from the GPS. A "No Flightplan Available" message displays if there is no flight plan entered or if the GPS has failed.

Figure 5.1 Trip Page Information

1) **Current ground speed and track**—As reported by your GPS Navigator.

2) **Course Deviation Indicator (CDI)**—Shows lateral distance (Crosstrack deviation) from desired course, providing continuous navigation reference when viewing the Trip page.

3) Time—Local and UTC time in HH:MM:SS using a 24-hour clock format.

4) Flight Plan Waypoints—Flight Plan information from your GPS. Active waypoint is shown in magenta.

■ For Flight Plan waypoints, the following data displays:

◆ **WPT**—Waypoint identifier as received from the GPS.

◆ **BRG**—Bearing to current waypoint.

◆ **DTK**—Desired track to waypoint.

◆ **NM** —Cumulative great circle distance of each flight plan leg.

◆ **ETE**—Cumulative estimated time enroute to waypoint in H:MM format for each flight plan leg at current ground speed.

◆ **ETA—**Estimated time of arrival to waypoint in HH:MM formatted for local time.

> **Note**: For the Garmin 430W, if the parallel track is active, the above data, WPT, BRFDG, DTK, NM, ETE, and ETA are not displayed.

◆ **Chart Icon**—Indicates that an Instrument Procedure chart is available for the associated airport. An "I" on the icon indicates that at least one ILS approach chart is available for the associated airport, on the CMax Chart page. Chart icons only display for those airports for which you have JeppView subscription coverage. For more information, see Section Figure 3.1, "Not for Navigation Watermark on Chart display" on page 26.

■ Intermediate waypoints are shown with the prefix Wx:. The Trip page includes distance (NM), waypoint name, and METAR, if available.

Intermediate waypoints are determined by your current flight plan. The EX5000 adds intermediate waypoints along your flight path to provide weather information between flight plan waypoints for longer flight plan legs. This can provide you with a fuller picture of enroute conditions.

5) METAR Symbol—A METAR report is shown for each flight plan waypoint that uses the same METAR condition symbols as

described in Section 2.2, "Map Symbols—Terrain and Position" on page 16.

6) **Trip Display Area**—Displays the information that you select with the *Display* button for the selected waypoint, when available.

7) **Destination Airport Info**—Provides quick access to airport information for the destination airport, when available.

8) **Display—**Controls the display shown in the lower portion of the screen. The selections are:

■ **METAR**—Displays the decoded text METAR for the selected waypoint, when available. If METAR cannot be decoded, raw text METAR will be displayed.

Special Conditions at KMDW.
CHICAGO MIDWAY INTL
Age: 18 minutes   Temp/Dew: 22°C / 18°C
Wind: 020° at 5 kts   Altimeter: 30.04 inches of Hg
Gust: none
Visibility: 7SM
Weather: light rain

Cloud cover: 1300 feet broken
              2200 feet broken
              7500 feet overcast

■   **Legend**—If Broadcast Datalink is installed, shows the types
     of data used in graphical METAR and Datalink Radar
     displays.If LEGEND is selected for the Trip page Display,
     there is a button for unit selection.

Units - Controls the units used for decoded METARs and
Datalink Legend. The selections are:

◆   **ENGLISH**-Displays the decoded METAR text and
     Datalink Legend using statute miles (SM), feet (ft), and
     inches of mercury (inHg)

◆   **METRIC**-Displays the decoded METAR text and Datalink
     Legend using meters (m), kilometers (km), and
     hectopascals (hPa). Cloud altitudes are still in feet (ft).

Unit selections apply to decoded METAR text on both the
Trip page and Nearest page.

NEXRAD
- light rain
- moderate rain
- heavy rain
- severe rain
- snow
- mixed
- no data

METARs
- VFR: > 5 SM & > 3000 ft
- MVFR: 3-5 SM or 1000-3000 ft
- IFR: 1-3 SM or 500-999 ft
- LIFR: .5-1 SM or 200-499 ft
- <CAT1: <.5 SM or <200 ft

Datalink
Strikes
- age < 5 minutes
- age between 5 & 10 minutes
- age between 10 & 15 minutes

Storm ⊕→ speed (kts) & direction of travel
Cells ⊕→ >50% chance of severe hail
xxx height (feet) / 100

■ **Broadcast Status**
Time since reception: If Broadcast Datalink is installed and available, displays satellite, signal and serial number information for the Broadcast Datalink system. Also displays the elapsed time since reception of the various types of weather data. If the time since reception for any particular weather product is greater than the limits defined by the system, a cyan alert message will display in the message box on the Aux Main page and in the message bar. For example, if 91 minutes has elapsed since the last TAF data was received, a "Broadcast TAFs > 90 min" message will display in the message bar and in the message list on the Aux page. When these messages are displayed, all data for that product

is removed from the MFD. The Trip page will indicate that new data for that product has not been received for greater than X minutes, where 'X' is the time limit defined for each product (typically 90 minutes).

Time Since Reception		Satellite Status	
NEXRAD	1 min.	Service Level:	Aviator
METARs	8 min.	XM Serial Number:	38M320CN
AIRMETs	6 min.	Signal Quality:	good
SIGMETs	3 min.		
TFRs	8 min.		
Lightning	2 min.		
TAFs	3 min.		
Winds Aloft	0 min.		
Storm Cells	0 min.		
Freezing Level	9 min.		

Note: Broadcast Datalink times indicated on the Trip page display the time since the product was received by the MFD ("time since reception"). There is an inherent time delay between the creation and reception of the broadcast weather data.

Service Level: The service level appears on the Broadcast Status page. The MFD displays to which service level you have subscribed. Your service level determines how much data is visible on screen.

◆ If you have an XM receiver, one of the following appears on screen: *Aviator, Aviator Pro*, or *None*.

◆ If the MFD cannot determine your subscription level, *Unknown* is displayed.

■ **Winds Aloft and Freezing Level/Temperatures Aloft**— Depending on your XM WX service level, displays Winds Aloft and Freezing Level data from Broadcast Datalink, if available. The Winds Aloft direction is measured from true (not magnetic) North. Winds are interpolated for each Trip page waypoint and are based on a computer forecast model that is updated hourly.

The XM Freezing Level forecast (see figure) displays the expected altitude of the freezing level for the waypoint, while

```
Winds Aloft for KCRQ

FL030   ---                 FL240   92° at  32 kts
FL060   125° at   9 kts     FL270   96° at  38 kts
FL090   129° at   7 kts     FL300   103° at  46 kts
FL120   102° at  10 kts     FL330   109° at  54 kts
FL150   102° at  18 kts     FL360   112° at  60 kts
FL180   95° at  23 kts      FL390   112° at  60 kts
FL210   91° at  27 kts      FL420   104° at  56 kts
```

■ **TAFs**—The EX5000 provides text Terminal Aerodrome Forecasts (TAF) from the National Weather Service via Broadcast Datalink, if available. TAFs are not decoded.

```
Terminal Aerodrome Forecast (TAF) for KCRQ

100527Z 100606 28005KT P6SM SCT003
TEMPO 0709 1/2SM FG BKN002
FM0900 13005KT 1/2SM FG BKN001
TEMPO 1014 1/4SM FG VV001
FM1600 15005KT 3SM HZ SCT003
FM1800 24008KT P6SM SKC
FM0200 04005KT P6SM SKC
```

> **Note**: Winds Aloft and TAFs are only available with certain broadcast packages. See the broadcast datalink documentation for more information.

■ ADS-B Status If the EX5000 is configured with for ADS-B weather, the Trip page will have a 'Status' button. Pressing the button will cycle through the following sub-pages

◆ **Products**- This is the standard Status page which display the product ages and receiver status

◆ **Stations**- This page shows information about which stations are providing data and the completeness of that data. White text in the CRL (Current Report List) Range columns indicates that additional data is expected.

◆ **Unavail**-This page displays information about products that are being reported as temporarily unavailable.

9) **Chart—**If CMax approach charts are installed and available, provides a quick jump to the Chart page with the highlighted airport pre-selected. For more information about CMax, see Section 3, "CMax Chart Pages (Optional) " on page 25.

10) Select knob—Use the right knob to move the cursor over the desired waypoint in the flight plan, which selects the plain-text METAR to be displayed along the bottom half of the screen.

> ⚠️ **Garmin GNS400/500-series users**: When the EX5000 is interfaced to a Garmin GNS400/500-series GPS via RS-232, the GPS may send duplicate waypoints while in approach mode. These duplicate waypoints may affect the distance and time readings on the Trip page. Use the GPS as the primary source of navigation information for approach procedures. Consult your avionics installation facility to determine if your EX5000 is interfaced to the Garmin GNS-430 via ARINC 429 or RS-232.

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Trip Page

6   Nearest Page (NRST)

The Nearest page displays the nearest airports within 100NM of your present position or the nearest airports to your destination. Through the buttons, you can access detailed information about each airport. The buttons also allow you to view the nearest VORs, NDBs, Intersections, and Obstacles.

6.1   Nearest Page

Figure 6.1 Nearest Page

1) **Airport details**—By default, displays the following details about the airports nearest to your current location:

   ■ **METAR and Chart Symbols**— Waypoints with METAR reporting stations display a color-coded METAR flag when Datalink is active. If CMax approach charts are installed, a chart icon displays next to any METAR reporting station for which an Instrument Procedure chart is available. An "I" on the icon indicates that at least one ILS approach chart is available. See *Chart*, below, for more information.

   ■ **ID**—Airport identifier of the airport.

- **BRG**—Bearing to the airport.

- **NM**—Distance to the airport.

- **Freq**—Radio frequency to contact this airport.

- **Name**—Airport common name.

2) **METAR Conditions**—Displays the decoded text METAR for the selected airport when Broadcast Datalink is enabled and a METAR is available.

3) **Airport Info**—Provides quick access to airport information for the airport highlighted. *Airport Info* only appears when viewing the Airports Nearest to Position and Airports Nearest to Destination. Airport Info displays a page similar to Figure 6.2.

4) **TYPE**—Cycles through the various Nearest data types in the following order:

- **PPOS APT (Airports Nearest Present Position)**—Graphical METARs, airport identifier, bearing, distance from the aircraft present position, frequency, and airport name.

- **DEST APT (Airports Nearest Destination)**—Graphical METARs, airport identifier, bearing, distance from the aircraft present position, frequency, and airport name.

- **VORs**—Identifier, bearing, distance, frequency, and name.

- **NDBs**—Identifier, bearing, distance, frequency, and name.

- **Intersections**—Identifier, bearing, and distance.

- **Obstacles**—MSL (and AGL) height, bearing, and distance.

5) **FILTER**—Press to see all airport types (SHOW ALL) or only the airport types as defined on the Airport Filter page (ON) (see Section Figure 7.2, "Airport Filter Setup Page" on page 69). *Filter* is only visible on the Nearest Airport pages.

6) **Chart**—If CMax charts are installed and you select an airport that has a chart icon, the Chart button appears, which provides a quick jump to the selected approach charts. For information about CMax, see Chapter 3 "CMax Chart Pages (Optional) ."

7) **Select knob**—Use the right knob to move the cursor up or down to highlight a specific airport or other data type.

6.2 Airport Info Page

When you press *Airport Info* from the Nearest page, the Airport
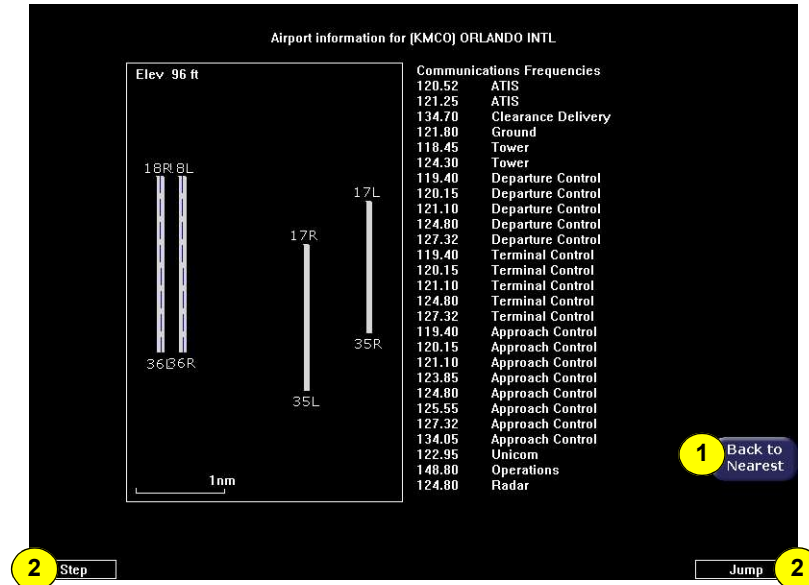Information page displays for the selected Airport, as shown:

Figure 6.2 Airport Information Page

1) **Back to Nearest**—Returns to the Nearest page.

2) **Step and Jump knobs**—If the communications frequencies list
    is long enough so that it does not fit on a single page, the Step
    and Jump labels appear on the left and right knobs:

    ■ **Step**—Scrolls the page one line.

    ■ **Jump**—Scrolls an entire page (or to the end of the list).

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7   Aux Page – Configuring the EX5000

Use the Aux page to configure a number of options on your EX5000. From the main Aux page, you can view informational messages and select the options you want to configure.

This section discusses the following topics:

- *Aux Main Page*, page 67
- *Airport Filter Setup Page*, page 69
- *Declutter Setup Page*, page 71
- *Data Block Edit Page*, page 73
- *System Time Page*, page 75
- Datalink Configuration page:
- Aux Main Page

Figure 7.1 Aux Main Page

1) **EX5000 Version Information**—Software part number, serial number, and media part number are displayed here. Expiration dates for on-board databases are also shown on this page.

2) **Message List including sensor status**—A record of the messages displayed in the message bar. If more messages are active than space allows, the right knob allows scrolling.

3) **Datalink Setup**—Provides configuration options for the Datalink Messaging.

4) **Lightning Strike Test**—Initiates a self-test of the lightning sensor, if installed.

5) **Traffic Standby/Traffic Self-Test**—If a SkyWatch traffic sensor is installed:

   ■ *Traffic Standby* switches the sensor back into standby mode only while on the ground. To view traffic data while on the ground press *Traffic* in Map page.

   ■ *Traffic Self-Test* replaces *Traffic Standby* after the Traffic sensor has entered Standby. Initiates a 30 second self test of the SkyWatch traffic sensor only while on the ground.

6) **Nav Src**—If your aircraft is equipped with multiple GPS units, switches between GPS1 and GPS2 to provide position information and flight plan data to the moving map.

7) **Setup Menus**—Buttons to select specific setup functions including Airport Filter, Declutter Settings, Data Block Editing, and System Time.

   Scroll knob—(Not shown) If there are more messages than fit on the current page, Scroll allows you to scroll the message list to see the remainder of the messages.

7.1 Airport Filter Setup Page

The Airport Filter Setup page allows you to set criteria for nearest airport searches of the database. You can select towered and/or non-towered airports, the type of surfaces you prefer to land on, and the minimum runway length based on your particular aircraft or type of flying. The values selected on this page also dictate the types of airports that get displayed on the map.
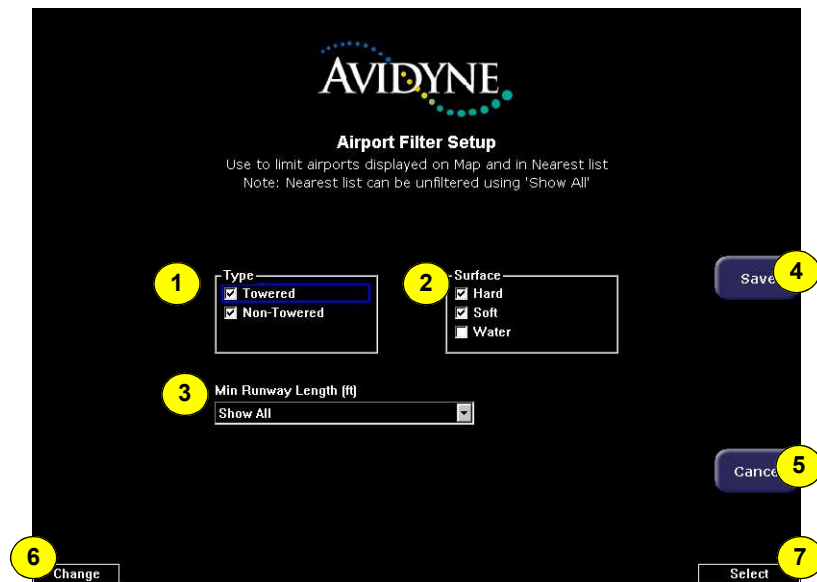
Figure 7.2 Airport Filter Setup Page

1) **Airport Type**—Select Towered, Non-Towered, or both.

2) **Surface**—Select between hard, soft, and/or water surfaces.

> **Note**: To display airports with both hard surface and water runways check the hard surface box.

3) **Minimum Runway Length**—select the minimum runway length from 2000ft.—7000ft. or show all lengths.

4) **Save**—Saves settings and returns to the Aux Main page.

5) **Cancel**—Cancels any changes and returns to the Aux Main page.

6) **Change knob**—The left knob changes the value or status of the selected field.

7) **Select knob**—The right knob moves the blue field selector.

7.2 Declutter Setup Page

The Declutter Setup page is used to define the navigation symbols and other default display settings for the *Declutter* button. Individual items can be selected for display or a pre-defined group of items can be selected by choosing VFR or IFR defaults.
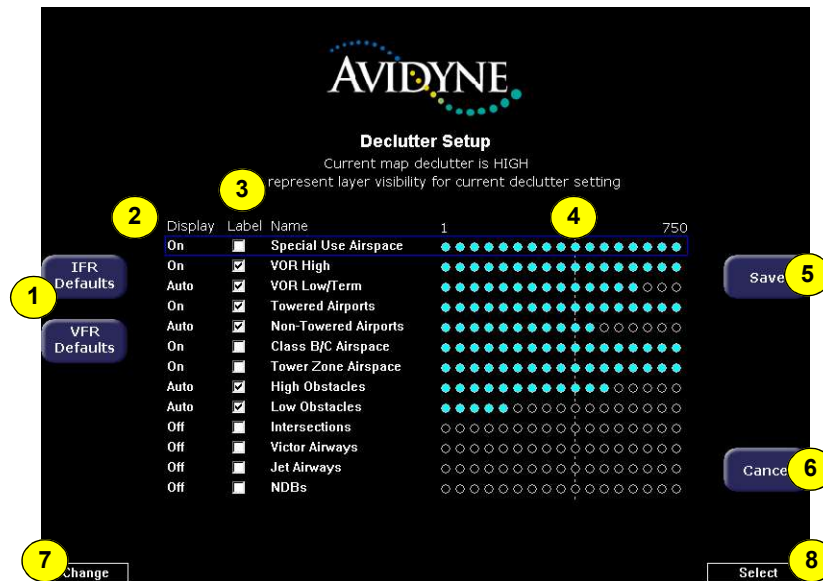
Figure 7.3 Declutter Setup Page

1) **IFR & VFR Defaults**—Sets the declutter settings to predefined factory settings based on typical usage.

2) **Display**—Each item has three possible display settings:

   ■ **On**—The item displays all the time.

   ■ **Auto**—The item displays automatically and declutters automatically based on pixel density of the display at a given range.

   ■ **Off**—The item is never displayed.

Note: The EX5000 may limit the number of symbols displayed based on the total symbol density.

3) **Label**—A check in the label box indicates that the item name will be displayed along with the symbol.

4) **Range Dots**—The circles represent the seventeen available map scales. A cyan-colored circle indicates that the item is displayed at that range. The vertical dash line indicates the map current scale.

> **Note:** The 1000NM and 1500NM columns are not displayed because this data is never displayed at these ranges.

5) **Save**—Saves settings and returns to the Aux Main page.

6) **Cancel**—Cancels any changes and returns to the Aux Main page.

7) **Change knob**—The left knob changes the value or status of the selected field.

8) **Select knob**—The right knob moves the blue field selector.

> **Note:** If all display elements are forced on via the Declutter Setup page, the quick declutter setting on Map page is set to maximum, and the Map Range is set greater than 400NM, Map performance may be slow, and in some cases, may cease to operate. If this occurs, you will need to recycle the EX5000 power to restore functionality.
>
> To avoid this situation, Avidyne suggests that you select the IFR or VFR Default declutter setting.

7.3 Data Block Edit Page

Data blocks in the upper corners of the Map page can be edited to display information from a list of available data types. A series of dashes represents data that is invalid or unavailable.
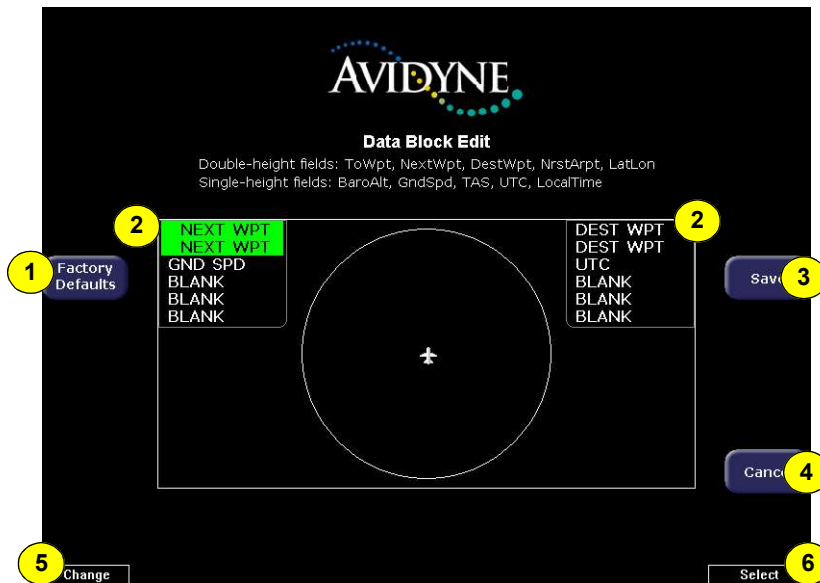
Figure 7.4 Data Block Edit Page

1) **Factory Defaults**—Resets the Data Blocks to the original display mode.

2) **Left & Right Data Blocks**—The Upper Left and Upper Right Data Blocks are user-configurable data blocks that appear in the upper left and upper right of the Map pages. You can keep these data blocks at the default factory configuration or you can customize the data that appears in the data blocks. The factory default uses the data blocks as follows:

   ■ Upper left contains engine and fuel data

   ■ Upper right contains navigation data.

   Each data block can have as many as 6 lines of data. If you configure BLANK lines, the data block is resized to show only

lines with valid data. The data block disappears if all lines are set to BLANK.

For information on the fields available in the data blocks, see Section 9.7, "Data Blocks" on page 103."

3) **Save**—Saves settings and returns to the Aux Main page.

4) **Cancel**—Cancels any changes and returns to Aux Main page.

5) **Change knob**—The left knob changes the value or status of the selected field.

6) **Select knob**—The right knob moves the green field selector.

7.4 System Time Page

The System Time page allows you to set the "time zone offset" based on your location relative to UTC. In addition, you can set the amount of time the button labels stay up on the Map page before decluttering or set to never declutter.

> ⚠ Before conducting flight operations, verify that time and date settings are correct and in GMT (UTC). It is critical that the time be set to the correct GMT to provide accurate display of Datalink weather.

Figure 7.5 System Time Page

1) **Time Source**—Select the time source. If "Auto" is selected, the EX5000 will first try to receive current time data from the attached GPS unit. If the GPS signal is not available, it will try to receive current time data from Narrowcast Datalink. If neither are available, the EX5000 will use the last known time data.

2) **Time and Date Setting**—If manual time source is selected, it allows you to manually adjust the current UTC value.

3) **Time Zone**—Set the time zone for your location, based on an offset from UTC.

> **Note:** The EX5000 maintains a constant offset from UTC and does not adjust local time for daylight savings.

> **Note:** If the EX5000 time has drifted noticeably from the current GPS time, ensure the GPS unit(s) are receiving valid GPS information by re-synching the EX5000 time as follows:
>
> • Enter the System Time page.
>
> • Change the "Time Source" setting from "Auto" to "GPS"
>
> • Return the setting to "Auto" and press the "Save" button.
>
> • If the "Time Source" was previously not set to "Auto", change the setting to "Auto" and press the "Save" button.

4) **Menu Timeout**—Set the amount of time that the menus remain visible on Map page from the following choices (in seconds): 2, 5, 10, 20, 30, 40, 50, 60, Never.

5) **Save**—Saves settings and returns to the Aux Main page.

6) **Cancel**—Cancels any changes and returns to the Aux Main page.

7) **Change knob**—The left knob changes the value or status of the selected field.

8) **Select knob**—The right knob moves the blue field selector.

7.5 MFD CMOS Battery Operation and Replacement

7.5.1   CMOS Battery

A CMOS (Complementary Metal-Oxide Semiconductor) battery is used in the EX5000 Series of MFDs to maintain the system clock. On average, CMOS batteries have been shown to last over 10 years. The clock in the EX5000 Series of MFDs is used to display the current time to the operator and to determine, among other things, the age of datalink products. Additionally, this clock is also used to tag logged data and in calculations such as ETA. Replacement of a CMOS battery is optional. The following section describes the steps that are needed to operate an EX5000 Series MFD with a nonfunctioning CMOS battery

7.5.2   Operating without a CMOS Battery

This section specifies the recommended steps that should be taken if/when the CMOS battery is no longer capable of maintaining the system time in an EX5000 Series MFD.

Without a CMOS battery, the system will report the current year to be 2000. If this is the case, the system setting should be checked to make sure the "manual" mode of clock update is not enabled. Follow the prescribed steps in the "System Time Page" section of the EX5000 Pilot Guide to set the system to either the "Auto" or "GPS" selection (either selection will update the MFD with the appropriate time). No other actions are required in order to update the system time.

When the system time selection is set to "Auto" or "GPS", the MFD will automatically correct the system time using the incoming GPS data once it is available. All Cirrus, Piper and Lancair OEM configurations, which include the EX5000, are attached to a GPS (GNS430 or IFD440/IFD540) and hence will automatically correct the system time upon battery failure if configured to default to GPS time. Until the GPS time is acquired by the connected GPS, the EX5000 Series of MFDs will display an incorrect time. The connected GPS system typically takes 45 seconds or less to acquire GPS time following system startup. Since the GPS position (and thus time) is available prior to takeoff the time will always be correct prior to takeoff.

7.5.3   CMOS Battery Replacement

For customers whose batteries are no longer operational, and are uncomfortable waiting for a GPS signal in order to facilitate the clock adjustment, we suggest replacement of the CMOS battery. Replacement of a CMOS battery is optional.

8   Datalink (Optional)

Datalink services allow you to view weather and other data on the Map and Trip pages. Avidyne offers Broadcast Datalink and ADS-B FIS-B data.

For most operations, the EX5000 weather data display is the same regardless of which Datalink system is in use.

8.1 Broadcast Datalink

The EX5000 supports an optional Broadcast Datalink receiver, either:

● An ADS-B FIS-B receiver.

● An XM receiver that supports XM WX.

Figure 8.1 Broadcast Receiver Options

Both receivers receive a constant stream of weather data. Broadcast Datalink requires a fixed monthly subscription.

XM provides US and Canadian Radar, METARS, and TAFs.

8.1.1   Using Broadcast Datalink in Flight

The Broadcast Datalink receiver receives weather data continuously. It is not necessary to enable or disable the receipt of individual types of data. You can control the display of received data on the Map, Trip or NRST pages.

Note: The boundary of the available datalink radar data is shown by an area with diagonal stripes. In normal operation, this boundary follows the outline of CONUS if US RDR is selected, or the extent of Canadian Radar if CAN RDR is selected. If, however, datalink radar is unavailable in a particular area for any reason, the hatched lines appear in that area. In the mountains and off the coast, hatched lines may represent no coverage below 10,000 feet. If there are

radar returns in that region above FL100, the returns will be displayed as "islands of precipitation" surrounded by the hatched lines.

8.2 Symbols Displayed using Datalink

This section describes the symbols displayed using Broadcast Datalink. Figure 8.2, below, displays many of the Broadcast Datalink symbols (though one hopes you are not flying in similar weather). For a complete list of Map symbols, see Chapter 2 "Map Page"."
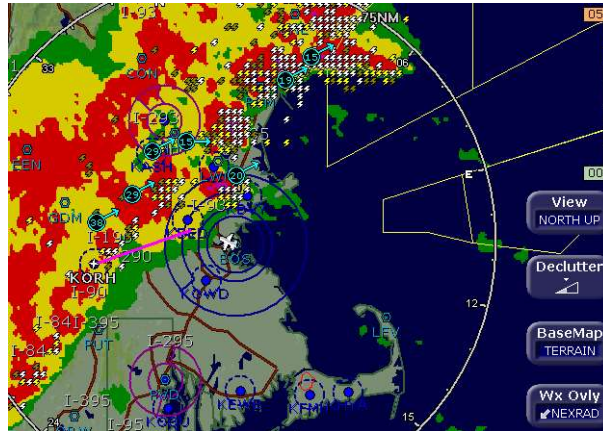
Figure 8.2 Broadcast Datalink Weather

● **Lightning strike symbols**—Depending on your broadcast service level, lightning information from the broadcast datalink weather is matched to grid coordinates with a resolution of approximately 2 NM. Overlapping lightning symbols may be decluttered for clarity:

● **METAR symbols**—Each METAR reporting station shown on the Map page will have a METAR condition flag displayed. The color of the METAR flag indicates the current conditions at that airport:

● **AIRMETs/SIGMETs**—Depending on your broadcast service level, AIRMETs and SIGMETs are shown as ribbed lines enclosing the area of the advisory and are color coded and

labeled as to their type. For more details, see Table 9.7 Airspace and Airways Lines on page 101.

● **Datalink Radar Images**—The XM Datalink Radar images are delivered with a resolution of approximately 1 NM. The EX5000 smoothes the edges of the Datalink Radar images, so that the images are not distracting at smaller zoom ranges. The Datalink Radar colors conform to aviation standards: green, yellow, red, and magenta depict varying intensities of rainfall, and shades of blue for snow and pink for mixed precipitation. A handy legend for the Datalink Radar colors is found on the Trip page:

● **Storm Cells**—If storm cells are present, the EX5000 displays the cells along with the cell's groundspeed, in knots, and direction of travel. If there is a greater than 50% chance of hail, the cell is displayed with a white background. It also shows echo tops..
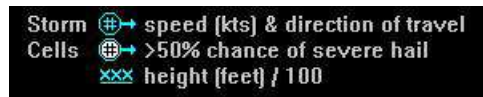
Note: At longer range settings, individual lightning strikes and storm cells are combined into single strikes or single storm cells, depending on their proximity. This avoids clutter and improves readability. And vice versa, lower map range settings will display more strikes and storm cells.

● **TFR**—Temporary Flight Restrictions (TFRs) are reported over the Broadcast Datalink. TFRs are shown with solid red lines on the Map page. Note that at a full Map Declutter setting (all navigation data and airspace removed), TFRs will also be removed from the display.

8.2.1   Using Datalink without a Traffic Sensor or Radar

Without Radar or a Traffic sensor installed, the EX5000 takes advantage of the available buttons and the *WX Reports* button is split into two buttons, *Air/Sig* and *Metars*, as shown below.
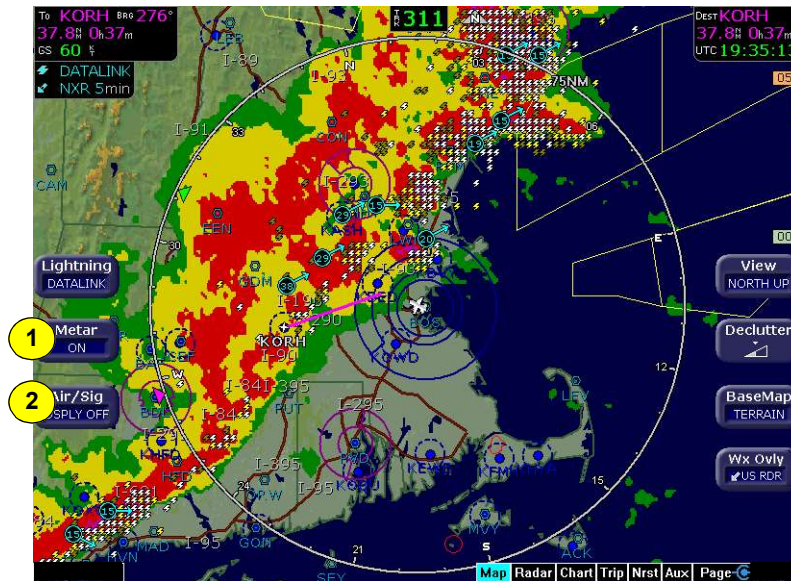
Figure 8.3 Datalink Weather without Traffic Sensors

1) **Metar**—Controls display of the graphical METAR symbols on the Map page. Press *Metar* to toggle between ON and DSPLY OFF.

2) **Air/Sig**—Controls the display of AIRMETs and SIGMETs. Press *Air/Sig* to cycle between ALL, AIRMET, SIGMET, and DSPLY OFF.

8.3 Nearest Page with Datalink Weather

The Nearest page also displays METAR information received via Datalink. Similarly to the Trip page, the METAR symbols are displayed in a column next to the Nearest airports list, for all airports that have weather reporting stations. Airports that do not report METARs do not have a METAR symbol shown. When Broadcast Datalink is enabled, the text METAR for the currently selected airport is displayed on the lower half of the Nearest page.

Figure 8.4 Nearest Page with Broadcast Datalink

For further information about Datalink weather on the NRST page, see Chapter 6 "Nearest Page (NRST)".

8.4 Trip Page with Datalink Weather

The Trip page also displays weather information from the weather Datalink. Each waypoint on the current active flightplan is associated with a METAR reporting point. For non-airport waypoints, the nearest METAR is used. The general conditions are reported with the same METAR flags as used on the Map page, here shown in a column for each waypoint. If legs on the flight plan exceed 100 miles in length, the EX5000 selects "intermediate waypoints" in between the waypoints of the leg, to provide greater situational awareness of the weather conditions along the route.

Figure 8.5 Trip Page with Datalink Weather

For information about Datalink weather on the Trip page, see Chapter 5 "Trip Page".

9 Reference

This section contains the following information:

9.1 Updating Your Databases

Avidyne allows you to upload the following types of data to your EX5000:

● **NavData**—For the Map page, Avidyne uses NavData from Jeppesen Sanderson, Inc. it is your duty as pilot in command to ensure that the data you fly with remains up to date.

● **CMax**™ **Chart Data**—An optional Avidyne feature that allows you to view JeppView chart data on your EX5000.

You can use a Zip Drive or USB Flash Memory Drive to move data between your PC and the EX5000. For more information about the databases, and about loading data from your PC to a Zip Drive or USB Flash Memory Drive, see the *Avidyne Data Update Guide*.

USB Flash Memory Drives come in many sizes and configurations. A sample USB Flash Memory Drive is shown below. For a list of approved USB Flash Memory Drives, see the Avidyne website at www.avidyne.com.

This section describes moving data from your Zip Drive or USB Flash Memory Drive to the EX5000.

If using a Zip Drive Dataloader:

- Allowing the portable Zip Drive to dangle by the cable can result in damage to your MFD, or the Drive, as well as a dataload failure.

- Do not insert the Zip disk into the Zip Drive until the regular start screen displays on the MFD. The disk may be damaged if it is already in the Zip Drive when power is applied.

- After loading the CMax data into your MFD, wait until the disk is ejected from the drive before unplugging the Drive, or powering off the MFD. Unplugging the Zip Drive with the disk still engaged may cause damage to the disk.

If using a USB Flash Memory:

- Avidyne strongly suggests that, to avoid confusion, you reserve a USB Flash Memory Drive solely for EX5000 database transfers.

- After uploading data, do not remove the USB Flash Memory Drive until you see and acknowledge the regular EX5000 Startup screen.

Note: When removing the rubber cap from the data port, pull the cap gently **from the top** until it pops out. Make sure the cap is all the way out before plugging anything into the USB port.

Do not tug on the tab at the bottom of the cap, this could separate the cap from the EX5000 bezel.

9.1.1　Loading NavData (the Navigation Database)

Your new EX5000 will be loaded with an up-to-date navigation database. Updates to the EX5000 NavData database are available from Jeppesen Sanderson, Inc. every 28 days and can be purchased either individually or on a subscription basis.

Once you have downloaded the Nav from your PC to either a Zip Disk Dataloader or USB Flash Memory Drive, as described in the *Avidyne Data Update Guide*, you will need to upload the data to your EX5000.

To load NavData to your EX5000:

1) Bring either the Zip Drive and disk or the USB Flash Memory Drive to the EX5000 at the aircraft.

2) Turn power OFF to the EX5000.

3) Connect the data source to the EX5000:

- If using a USB Flash Memory Drive, plug it into the data port on the front of the EX5000.

- If using a Zip Drive Dataloader, put the Zip disk into the Zip Drive. Connect one end of the cable to the Zip Drive and the other end to the EX5000 data port.

> **Note:** Ensure that the Dataloader is supported and not dangling by the cable. Letting the Dataloader dangle can cause permanent damage to the data port. It can also cause an intermittent connection, which will result in an unsuccessful data update

4) Turn on the master switch to power up the EX5000. The Dataloader page displays.

> **Note:** If the regular start screen displays, the EX5000 did not detect the Zip Drive. Check the connection between the Zip Drive and the EX5000, then restart the procedure.

5) Press *Proceed*. Do not turn off the EX5000 or disconnect the cable during a data load.The data load is complete when the regular Startup page is displayed.

6) At this point, turn off power to the EX5000, remove your USB Flash Memory Drive or Zip Drive, and then turn the EX5000 power back on. This step ensures that all data has been checked in self-test and the MFD is ready for use.

This step ensures that all data has been checked in self-test and the MFD is ready to use.

7) Store the Zip Drive and cable or USB Flash Memory Drive in a safe place.

9.1.2 Loading CMax Chart Data

Once you have downloaded the CMax data from your PC to either a Zip Disk Dataloader or USB Flash Memory Drive, as described in the *Avidyne Data Update Guide*, you will need to upload the data to your EX5000.

To load CMax Data to your EX5000:

1) With the MFD power OFF:

   ■ If using a USB Flash Memory Drive, plug it into the data port on the front of the EX5000.

   ■ If using a Zip Drive Dataloader, connect one end of the cable to the Zip Drive and the other end to the EX5000 data port Do not insert the Zip disk into the Zip Drive until after you turn on the MFD (in step 2).

   > **Note:** Ensure that the Dataloader is supported and not dangling by the cable. Letting the Dataloader dangle can cause permanent damage to the data port. It can also cause an intermittent connection, which will result in an unsuccessful data update.

2) Turn on the MFD. If you are using a Zip Drive, insert the Zip disk into the Zip Drive when the initial Avidyne logo screen is displayed.

3) The Dataloader page displays.

   If this is the first-ever update, you may see a warning that you are about to load older data than the MFD already contains. This is because the preloaded demo charts expire in the year 2020, so the warning message is normal.

   Press *Proceed* to start the chart data load.

4) The Dataloader page shows the progress as it loads the data into the MFD. After loading the data, the Dataloader performs an integrity check on the data and displays a successful data load message if all data is valid.

5) When the operation is complete, the CMax Dataloader will restart the EX5000.

6) At this point, turn off the power to the EX500, remove your USB FLash Memory Drive or Zip Drive, and then turn the EX5000 power back on.

This step ensures that all data has been checked in self-test and the MFD is ready to use.

7) Confirm the valid dates of the Chart data as reported on the Startup Screen.

8) Go to the Chart page and select a chart from an airport known to be in your subscriptions coverage area. Confirm that the chart is available.

9) Store the Zip Drive and cable or USB Flash Memory Drive in a safe place.

9.2 Activating Broadcast Datalink Accounts

If you have a Broadcast Datalink receiver installed, you must log in to MyAvidyne.com or contact XM to activate service from either:

● XM Radio for XM WX Satellite Weather. To activate your XM subscription, contact XM Satellite Radio's Listener Care Center at 1-800-985-9200 and speak with an XM Satellite Radio representative.

Have the following information available when you contact Avidyne or XM Radio:

● Your name

● The weather service package. See the appropriate website to select the subscription service:

   For XM weather, go to,

   www.xmwxweather.com.

● The Broadcast Radio Serial Number (ID Number)

   To obtain the ID of the Broadcast receiver installed in your aircraft, open the EX5000 Trip page. Press the *Display* key until "↓ **Status**" (Broadcast Datalink status) is shown, and carefully enter your Radio Serial Number.

Note: XM Radio does not use the characters: I (India), O (Oscar), S or F.

● Credit Card Information

What is Next?

For XM Broadcast Weather, go to Section 9.2.1, "Activating XM WX Satellite Weather" on page 93.

9.2.1   Activating XM WX Satellite Weather

To activate your XM subscription, contact XM Satellite Radio's Listener Care Center at 1-800-985-9200 and speak with an XM Satellite Radio representative.

XM WX Satellite Weather will activate your receiver by sending a unique activation code to your receiver. This code is valid for 24 hours after your call.

To complete and verify the activation:

1) Move your aircraft outside to an area with a clear view of the sky.

2) Power up both the EX5000 and the Broadcast receiver and wait at least an hour to allow the receiver to receive the activation signal.

3) When your receiver receives the activation code from XM, the EX5000 will display information on the following EX5000 pages:

   ■ **Trip** page - will display METARS, TAFS, Winds Aloft, freezing level forecast, and time since reception for all weather products.

   ■ **Map** page - will display weather, including datalink radar data, satellite-provided lightning, storm cells, and METARs through the use of the METAR symbology

   ■ **Nearest** page - will display METARS through the use of the METAR symbology.

Note: If 24 hours pass before you can get to your aircraft, contact XM Satellite Radio's Listener Care Center again or visit www.xmradio.com/activation to enter your receiver ID number to enable the activation code for your receiver for an additional 24 hours.

Note: The EX5000's Service Level indication may take several flights to synchronize to the correct level but you will still receive and see the weather products you have purchased.

Note: Contact Heads Up Technologies for problems relating to your receiver or assistance with service.
e-mail: service@heads-up.com
Phone: (972) 980-4890 Ext. 142

For problems relating to your receiver, contact Heads Up Technologies:

E-mail: service@heads-up.com
Phone: (972) 980-4890 Ext. 142.

9.3 Cleaning the EX5000 Screen

If your EX5000 screen should become dirty due to fingerprints or dust, clean the screen using the following materials and methods:

● A clean, soft lint free cloth such as 3M Ultra-Brite Cloth # 2011 or similar.

● A cleaning solution composed of de-ionized water or isopropyl alcohol (IPA).

Always apply the cleaning solution directly onto the cloth. **Never** spray cleaner directly onto the screen.

Note: Use caution when using IPA as it is flammable.

Using any other chemicals or materials voids the warranty.

The EX5000 screen is made of a plastic film that is vulnerable to scratches, damage by a sharp articles or improper cleaners. Use care when cleaning.

9.4 Sensor Status Block Symbols

Table 9.1   Sensor Status Block Symbols

Symbol	Type	Status
◆	Traffic	A solid cyan symbol indicates that the sensor system is reporting a healthy status and is being displayed in the mode listed in the sensor status block.
⚡	Lightning	
◇	Traffic	A hollow cyan symbol indicates that the function is reporting a healthy status, but is turned off for display on the Map page.
⚡	Lightning	
◆	Traffic	A solid yellow symbol indicates that the EX5000 is unable to display data from that particular sensor. This may be due to a communication error, the sensor is not healthy, or there is a configuration problem.
⚡	Lightning	
◇	Traffic	A hollow yellow symbol indicates that the function is not able to display data due to the same reasons as above, and is turned off from display on the Map page.
⚡	Lightning	

Table 9.2   Broadcast Datalink Sensor Status Block (Optional)

Symbol	Status
	A solid cyan arrow indicates that Datalink Radar imagery is currently displaying on the Map page, but the Broadcast signal is Marginal, Weak, or None.
	An animated black and cyan arrow indicates that Datalink Radar imagery is turned off for display on the Map page, but the Datalink Radar data is valid and the broadcast signal quality is Good.
	An animated cyan arrow indicates that Datalink Radar imagery is currently displaying on the Map page. The broadcast signal quality is Good.
	An empty (hollow) arrow indicates that Datalink Radar imagery is turned off for display on the Map page and the broadcast signal quality is Marginal, Weak, or None.
	A solid yellow arrow indicates that Datalink Radar imagery is selected for display, but is not shown because the Datalink Radar data is invalid. The broadcast signal quality is Marginal, Weak, or None.
	An animated black and yellow arrow indicates that Datalink Radar imagery is turned off for display on the Map page and the Datalink Radar data is invalid. The broadcast signal quality is Marginal, Weak, or None.
	An animated yellow arrow indicates that Datalink Radar imagery is selected for display, but it is not shown because the Datalink Radar data is invalid. The broadcast signal quality is Good.

9.5 Map Symbols

The EX5000's Map uses symbols contained in its navigational database, based on your navigational mode and flight situation. Map can display the following database items:

● Airports

● Navaids (VORs, NDBs and Waypoints)

● Airways (Victor and jet)

● Intersections, waypoints and other named fixes

● Class B and Class C controlled airspace

● Tower Zone Airspace

● Obstacles (>200' AGL)

● Certain classes of special use airspace (Prohibited, Restricted, Warning, Alert and Military Operating Areas)

Navigational symbols used by Map are shown in this section.

Table 9.3   Map Symbols – Airports

Airport Type	Surface		
	Hard	**Soft**	**Water**
Towered	●	◦	●
Towered	◆	◇	◆
Non-Towered	●	◦	●
Non-Towered	◆	◇	◆

Notes:

• The larger airport symbols are displayed as the map scales are reduced to the smaller ranges.

• Airport types are derived directly from the Jeppesen navigation database.

Table 9.4   Map Symbols – Navigational Fixes

Symbol	Item	Description
	NDB	All NDBs
	VOR	All VORs
	Intersection	Terminal, Jet, and Victor airway waypoints (intersections)

Table 9.5   Map Symbols – Traffic Symbols

Non-TAS Symbol	TIS Symbol	Type	Meaning
		Traffic Alert (TA)	Traffic within the alert zone defined by the traffic sensor.
		Proximate Traffic	Traffic close to your position but not within an alert zone.
		Other Traffic	Traffic detected by the traffic sensor, but determined not to be a current threat.

Table 9.6   Map Symbols – Other
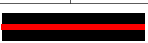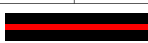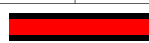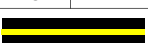
Symbol	Item	Symbol	Item
	Flight Plan (active leg)		Single Low Obstacle >= 200° AGL < 1000° AGL
	Flight Plan (inactive leg)		Low Obstacles within 1NM of each other >= 200° AGL < 1000° AGL
	Map Orientation		Single Obstacle >= 1000° AGL
	Ownship Symbol		Obstacles within 1NM of each other >= 1000° AGL
	Flight Plan, Course Waypoints		Interstate Highway

9.6 Line Styles

Table 9.7   Airspace and Airways Lines

Item	Color	Line	Label
Class B	Blue		Elevation
Class C	Magenta		Elevation
Tower Zone Airspace	Dashed Blue		None
Victor Airways	Blue grey		ID Label
Jet Airways	Blue grey		ID Label
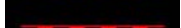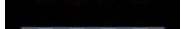
Table 9.8   SUA and TFR Status Lines

Region Type	Status							
	Inactive		Unknown		Pending		Active	
	Line	Label	Line	Label	Line	Label	Line	Label
Prohibited, Restricted	Dashed	Inact	Single	Unk	Single	Pend	Triple	Act
Warning, Alert, MOA	Dashed	Inact	Single	Unk	Single	Pend	Triple	Act
TFR	Dashed	N/A	N/A	N/A	Single	N/A	Triple	N/A

Note: For adjacent or overlaying types of Special Use Airspace (e.g. Restricted Areas or Prohibited Areas within larger MOAs), some masking of the border lines may occur. See current aeronautical charts for accurate boundaries.

Table 9.9   AIRMET and SIGMET Boundary Lines

Line Color		Type	Label
	Bright blue	Mountain AIRMET	MTN
	Dark yellow	IFR AIRMET	IFR
	Orange	Turbulence AIRMET	TURB
	Blue	Icing AIRMET	ICE
	Dark Red	SIGMET AIRMET	SIG
	Blue grey	Convective SIGMET	CSIG

9.7 Data Blocks

Table 9.10   Data Block Information

Name	Description	Range
TO WPT	Name of, bearing and distance to the "To" waypoint in the active flight plan. The bearing is from your present position directly to the fix. If you are off course, it will differ from your planned course. Distance is measured direct. Also displays ETE (Estimated Time En route). **Note**: For parallel track, there is no waypoint label. All other data is displayed only if supplied by GPS.	5 characters (Name) 1 to 360 degrees 0.0 unlimited NM. HH:MM:SS
NEXT WPT	Name of, bearing and distance to the "To" waypoint in the active flight plan. Also displays ETE (Estimated Time En route). **Note**: For parallel track, all data is removed.	5 characters (Name) 1 to 360 degrees 0.0 unlimited NM. HH:MM:SS
DEST WPT	Name of and distance to the final destination waypoint in system distance units. Distance is measured along planned route. **Note**: For parallel track, all data is removed.	5 characters 0.0 unlimited NM
NRST ARPT	Identifier of, bearing and distance to the nearest airport.	5 characters (Name)
LAT/LON	Current latitude and longitude in degrees and decimal minutes.	N/S 0 to 90o 0' E/W 0 to 180o 0'
BARO ALT	Barometric Altitude.	Based on data from FMS (if available) or GPS (see Note)
GND SPD	Current ground speed in system speed units.	0.0 to 999.9 knots
TRUE AIRSPD	True Airspeed (TAS not available from most panel-mounted GPS systems).	From FMS
UTC TIME	UTC (Greenwich or "Zulu") time.	0 to 23h 59m 59s
LOCAL TIME	Local data and time. Derived from UTC time with time zone setting applied.	0 to 23h 59m 59s
Blank	Blank space	

Reference

> **Note:** The Baro Altitude may be received from the FMS or GPS (via 429). The FMS/GPS calculates the altitude based on the barometric pressure entered into the FMS by the pilot. This display verifies what has been put into the FMS/GPS. Do not rely on this display for terrain separation.

9.8 TAWS Messages

Table 9.11   TAWS Messages

TAWS Messages & Colors		Meaning	Recommended Pilot Action
Caution Obstacle		EGPWS Obstacle caution.	Fly to avoid obstacle.
Caution Terrain		EGPWS Terrain caution.	Fly to avoid terrain.
OBSTACLE AHEAD, PULL UP		EGPWS Obstacle Warning.	Pull up to avoid obstacle.
TERRAIN AHEAD, PULL UP		EGPWS Obstacle Warning.	Pull up to avoid terrain.
TAWS Display Initializing		During its startup phase, this Message displays. While TAWS display is initializing, the TAWS page is painted with magenta dots overlaid by the large text annunciation TAWS DISPLAY INITIALIZING.	The message should clear spontaneously. If the test fails or does not terminate refer to the EGPWS pilot's guide.
TAWS Sensor Self Test		The EGPWS is performing a Self-Test. A distinctive color test pattern will be displayed. The large text annunciation, "TAWS SENSOR SELF-TEST" is presented over the test pattern. The text will remain until the self-test is finished.	If the test fails or does not terminate refer to the EGPWS pilot's guide.

Reference

Table 9.11   TAWS Messages (Continued)

TAWS Messages & Colors		Meaning	Recommended Pilot Action
TAWS Display Inhibited		When you inhibit EGPWS alerts by means of the separate EGPWS control panel, the TAWS Display page is painted with magenta dots overlaid by the large text annunciation TAWS DISPLAY INHIBITED.	Check to see if the control settings are correct. If the EGPWS is not inhibited and if this message persists, contact an Avidyne Entegra Authorized Service Center.
TAWS Display Unavailable		The EGPWS is unable to supply the EX5000 with a reliable TAWS display, probably because one if its inputs from another device in the aircraft is incorrect or unreliable. When the TAWS Display is unavailable due to this condition, the TAWS Display page is painted with magenta dots overlaid by the large text annunciation TAWS DISPLAY UNAVAILABLE.	Check to see that EGPWS is powered up. Have an Avidyne Entegra Authorized Service Center check configuration and installation.
TAWS Not Communicating		Indicates that the EGPWS sensor is powered down or incorrectly attached to the EX5000. Whenever the TAWS Display is unavailable due to this failure, the TAWS Display page is painted with magenta dots overlaid by the large text annunciation TAWS NOT COMMUNICATING.	Check to see that EGPWS is powered up. Have an Avidyne Entegra Authorized Service Center check configuration and installation.

9.9 Nav Messages

Table 9.12   Nav Messages

NAV Messages and Colors		Meaning	Recommended Pilot Action
Nav Source Data is valid		GPS/FMS indicates that the computed position data is valid.	Acknowledge.
Nav Source Data is NOT valid (err=x)		Your GPS/FMS has not computed a valid position or is not supplying valid data. Flight Plan will not be presented on the Radar display.	Check GPS for valid position. Have an Avidyne Entegra Authorized Service Center check GPS/FMS and installation
Nav Source: Can't Open Port		The GPS/FMS interface cannot open the assigned port. Generally indicates a configuration error.	Have an Avidyne Entegra Authorized Service Center check configuration and installation
Nav Source Reconnecting…		EX5000 is attempting to reconnect to the port that is connected to the GPS/FMS.	Acknowledge.
Nav Source is Not Communicating		EX5000 does not detect any data being sent from the GPS/FMS.	Have an Avidyne Entegra Authorized Service Center check configuration and installation
Nav Source Data Format Error		Invalid data is coming from your GPS/FMS. If persistent, generally indicates a configuration error.	Have an Avidyne Entegra Authorized Service Center check configuration and installation

Table 9.12   Nav Messages (Continued)

NAV Messages and Colors		Meaning	Recommended Pilot Action
Heading Data is NOT Valid		GPS/FMS is configured as the Map heading source and that data ceases to be available or becomes invalid.	Have an Avidyne Entegra Authorized Service Center check configuration and installation
Heading Data is Valid		GPS navigator is configured as the Map heading source and that data becomes valid following an acknowledgement of an invalid message.	Acknowledge.
Parallel Track Active		430W is operating in parallel track mode. Certain flight plan information will not be available.	Acknowledge

9.10 Traffic Messages

Table 9.13   Traffic Messages

Traffic Messages & Colors		Meaning	Recommended Pilot Action
Traffic Sensor is Operating Normally		Traffic sensor is operating in a normal state from a recoverable fault that was previously acknowledged.	Acknowledge.
Traffic <Bearing> / <Distance > / <Relative Altitude>		Traffic Advisory	Acknowledge to go to Dedicated Traffic page and begin looking for traffic.
Traffic <Distance> / <Relative Altitude>		Traffic Advisories with no bearing information.	Acknowledge to go to Dedicated Traffic page to look for traffic.
Traffic <Bearing> / <Distance>		Traffic Advisories with no relative altitude information.	Acknowledge to go to Dedicated Traffic page to look for traffic.
Traffic <Distance>		Traffic Advisories with no bearing and no relative altitude information.	Acknowledge to go to Dedicated Traffic page and begin looking for traffic.
Traffic Sensor is in Stand- By		EX5000 receives a "Stand-By" transmission from the traffic sensor. Press "Traffic" button to select a traffic mode.	Have an Avidyne Entegra Authorized Service Center check configuration and installation if message persists.
Traffic Sensor is in Self-Test		Traffic sensor is in self-test mode.	Acknowledge.
Traffic Sensor is Not Communicating		Traffic sensor is not transmitting data.	Have an Avidyne Entegra Authorized Service Center check configuration and installation.

Table 9.13   Traffic Messages (Continued)

Traffic Messages & Colors		Meaning	Recommended Pilot Action
TCAD Altitude Unavailable		TCAD sensor is not receiving altitude information.	Have an Avidyne Entegra Authorized Service Center check configuration and installation
Traffic Heading Source Failed		TAS/ TCAS is configured as the Map Heading source and a "fatal heading fault" is received.	Have an Avidyne Entegra Authorized Service Center check configuration and installation
Traffic Heading Source is Valid		Traffic sensor is configured as the Map Heading source and is valid.	Acknowledge.

Lightning Messages

Table 9.14   Lightning Messages

Lightning Messages & Colors		Meaning	Recommended Pilot Action
Lightning Sensor is Operating Normally		Lightning source is operating in a normal state from a recoverable fault that was previously acknowledged.	Acknowledge.
Lightning Sensor is in Noise- Monitor Mode		Lightning source is in Noise- Monitor Mode.	Have an Avidyne Entegra Authorized Service Center check configuration and installation.
Lightning Sensor is in Demo Mode		Lightning source is in Demo Mode.	Have an Avidyne Entegra Authorized Service Center check configuration and installation.
Lightning Sensor is in Test Mode		Lightning sensor in a self-test mode.	Acknowledge.

Table 9.14   Lightning Messages (Continued)

Lightning Messages & Colors		Meaning	Recommended Pilot Action
Lightning Sensor ERROR		EX5000 receives a "recoverable fault" notification.	Have an Avidyne Entegra Authorized Service Center check configuration and installation.
Lightning Sensor has FAILED		EX5000 receives a "fatal fault" notification.	Have an Avidyne Entegra Authorized Service Center check configuration and installation.
Lightning Sensor is Not Communicating		EX5000 receiving no data from the lightning sensor.	Have an Avidyne Entegra Authorized Service Center check configuration and installation.
Lightning Ahead **(WX-500 only)**		Stormscope is indicating discharge activity horizontally within ± 22 ° of the aircraft nose and within 75nm.	Determine location of lightning and avoid.
Lightning Heading Source Failed		Stormscope is configured as a heading source and a "fatal heading fault" is received.	Have an Avidyne Entegra Authorized Service Center check configuration and installation.
Lightning Heading Source OK		Stormscope is configured with heading input.	Acknowledge.
Lightning Antenna Location Changed **(WX-500 only)**		Stormscope antenna location disagrees with EX5000 setting.	Have an Avidyne Entegra Authorized Service Center check configuration and installation.
Lightning Position Source Failed **(TWX-670 only)**		The position reporting source (GPS or FMS) connected to the TWX-670 has encountered a fatal fault.	Have configuration checked at an Avidyne Authorized Entegra Service Center.

Table 9.14   Lightning Messages (Continued)

Lightning Messages & Colors		Meaning	Recommended Pilot Action
Lightning Position Source OK **(TWX-670 only)**		The position reporting source (GPS or FMS) connected to the TWX-670 has returned to normal operation.	Acknowledge.
Noise Present **(TWX-670 only)**		The TWX-670 has detected excessive noise in the system. Accuracy and efficiency of the lightning sensor may be negatively affected.	Have configuration check at an Avidyne Authorized Entegra Service Center.
Stuck MK **(TWX-670 only)**		Microphone PTT switch is stuck open. Lightning strikes will not be displayed until the problem is fixed.	Check the aircraft PTT switches. If the problem persists, have the aircraft checked at an Avidyne Authorized Entegra Service Center
No Position Data **(TWX-670 only)**		The position reporting source (GPS or FMS) connected to the TWX-670 is not sending position data.	Cycle position sensor power. Have configuration checked at an Avidyne Authorized Entegra Service Center.

9.11 PFD Messages

Table 9.15   PFD Messages

PFD Messages & Colors		Meaning	Recommended Pilot Action
PFD is Operating Normally		PFD is operating in a normal state from a recoverable fault that was previously acknowledged.	Acknowledge.
PFD is Not Communicating		MFD is receiving no data from PFD	Have an Avidyne Entegra Authorized Service Center check configuration and installation.

9.12 Broadcast Datalink Messages

Table 9.16   Broadcast Datalink Messages

Datalink Messages & Colors	Meaning	Recommended Pilot Action
Broadcast Receiver Not Communicating	EX5000 has received no data from the broadcast receiver for 10 minutes	Have the wiring from the broadcast receiver to the EX5000 inspected.
Broadcast Antenna is Disconnected	The Broadcast Datalink antenna or cable is not properly connected to the receiver.	Have the Broadcast antenna connection inspected.
Broadcast Receiver is Operating Normally	The Broadcast receiver is operating in a normal state from a recoverable fault that was previously acknowledged.	Acknowledge.
Broadcast Data not yet received	The EX5000 did not receive Broadcast weather data within the first 10 minutes after power-on.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast RADAR not received	The EX5000 did not receive Datalink Radar data within the first 15 minutes after power-on.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast METARs not yet received	The EX5000 did not receive METAR data within the first 15 minutes after power-on.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast Storm Cells not yet received	The EX5000 did not receive Storm Cell data within the first 15 minutes after power-on.	Monitor Broadcast system during flight, have system inspected if performance does not improve.

Table 9.16   Broadcast Datalink Messages (Continued)

Datalink Messages & Colors		Meaning	Recommended Pilot Action
Broadcast Winds Aloft not yet received		The EX5000 did not receive Winds Aloft data within the first 15 minutes after power-on.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast TAFs not yet received		The EX5000 did not receive TAF data within the first 15 minutes after power-on.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast Freezing Level not yet received **(XM only)**		The EX5000 did not receive Freezing Level data within the first 15 minutes after power-on.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast AIRMETs not yet received		The EX5000 did not receive AIRMET data within the first 15 minutes after power-on.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast SIGMETs not yet received		The EX5000 did not receive SIGMET data within the first 15 minutes after power-on.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast TFRs not yet received		The EX5000 did not receive TFR data within the first 15 minutes after power-on.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast Lightning not yet received		The EX5000 did not receive Lightning data within the first 15 minutes after power-on.	Monitor Broadcast system during flight, have system inspected if performance does not improve.

Table 9.16   Broadcast Datalink Messages (Continued)

Datalink Messages & Colors		Meaning	Recommended Pilot Action
Broadcast NEXRAD > 120 min		Broadcast RADAR data age since creation is greater than 120 minutes. RADAR data can no longer be displayed.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast Canadian Radar > 120 min		Broadcast Canadian Radar data age since creation is greater than 120 minutes. RADAR data can no longer be displayed.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast METARs > 90 min		Broadcast METAR data age since creation is greater than 90 minutes. METAR data will not display.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast AIRMETs > 90 min		Broadcast AIRMET data age since creation is greater than 90 minutes. AIRMET data will not display.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast SIGMETs > 90 min		Broadcast SIGMET data age since creation is greater than 90 minutes. SIGMET data will not display.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast TAFs > 90 min		Broadcast TAF data age since creation is greater than 120 minutes. TAF data can no longer be displayed.	Monitor Broadcast system during flight, have system inspected if performance does not improve.

Table 9.16   Broadcast Datalink Messages (Continued)

Datalink Messages & Colors		Meaning	Recommended Pilot Action
Broadcast TFRs > 90 min		Broadcast TFR data age since creation is greater than 90 minutes. TFR data will not display.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast Storm Cells > 20 min		Broadcast Storm Cell data age since creation is greater than 20 minutes. Storm Cells will not display.	Monitor Broadcast system during flight, have system inspected if performance does not improve.
Broadcast Winds Aloft > 90 min		Broadcast Winds data age since creation is greater than 90 minutes. Winds data can no longer be displayed.	Monitor Broadcast system during flight, have system inspected if performance does not improve.

9.13 Avionics Abbreviations

The following avionics abbreviations are used in this manual:

Table 9.17   Avionics Abbreviations

Abbreviation	Meaning
AGL	Above Ground Level
AIM	Aeronautical Information Manual
AIRMET	AIRman's METeorological advisory
CDI	Course Deviation Indicator
CONUS	Continental United States
EGPWS	Enhanced Ground Proximity Warning System
GPS	Global Positioning System
IFR	Instrument Flight Rules
ILS	Instrument Landing System
METAR	Meteorological Aerodrome Report
MFD	Multi-Function Display
MSL	Mean Sea Level
NDB	Non-Directional Beacon
NM	Nautical Mile
NOTAM	NOTices to AirMen - Important information provided by the FAA or similar international organizations.
PFD	Primary Flight Display
SIGMET	SIGnificant METeorological advisory
SUA	Special Use Airspace
TA	Traffic Advisory
TACAN	Tactical Air Navigation
TAF	Terminal Aerodrome Forecasts
TAS	Traffic Advisory System
TAS	True Air Speed
TAWS	Terrain Awareness and Warning System
TCAD	Traffic and Collision Alert Device
TCAS	Traffic Alert Collision Avoidance System
TFR	Temporary Flight Restrictions
UTC	Universal Coordinated Time (Zulu) (Greenwich Mean Time)

Table 9.17   Avionics Abbreviations (Continued)

Abbreviation	Meaning
VFR	Visual Flight Rules
VOR	VHF Omnidirectional Radio Beacon
WX	Weather

10 Using EX5000 Outside the US

When flying outside the United States, some features may either be unavailable or have limited availability. This section describes these differences.

> ⚠️ NOTAM information is subject to constant change. It is **extremely important** that you check with your local flight service or other official flight advisory service for applicable NOTAMs before EVERY flight.

10.1 Features Available in the US Only

The following features are generally not available on the Entegra EX5000 when flying outside the United States.

● **Obstacle Display**—The obstacle database is valid only for the United States.

● **TIS Traffic**—TIS Traffic is only available in the US where Mode-S radar service is available. For more information about TIS sensors, see Section 1-3-5 of the Aeronautical Information Manual.

● **TFRs**—Temporary Flight Restrictions are displayed only within the United States when 2-Way Datalink is in use.

10.2 Features Available in North America

● **XM WX Weather**—XM WX Satellite Weather (Broadcast Datalink), and therefore the EX5000 Datalink features, are not currently available outside North America.

● **ADS-B Weather**

10.3 Features Specific to International Flight

● **CMax Chart Data**—Terminal procedure chart availability is determined by your CMax chart subscription coverage. For questions regarding your coverage area, contact Jeppesen at www.jeppesen.com, or by phone (for western hemisphere,

including South America, call +1-303-799-9090, for eastern hemisphere, including Europe, call +49 6102 5070).

● **Terrain Data**—Avidyne provides terrain data for two areas: the Americas, and International (everything else). If you are flying in an area where your current terrain data is not supported, terrain will not display (similar to the Base view on the Map page).

When purchasing an EX5000, you can specify which terrain data you want on your MFD. An International Conversion Utility is available from Avidyne that changes the MFD terrain data between Americas and International. The utility can be installed in the field at an Avidyne Authorized Entegra Service Center. For information about the International Conversion Utility contact Avidyne Technical Support.

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AVIDYNE EXCLUSIVE LIMITED WARRANTY
and LIMITATIONS ON LIABILITY

Avidyne warrants the Product manufactured by it against defects in material and workmanship for a period of twenty-four (24) months from delivery. If Avidyne's Product fails to conform to this warranty, Avidyne, in its sole discretion, will either repair or replace the Product or provide a refund of the purchase price paid for the Product. This warranty is made upon the express conditions that:

(a) Avidyne is given prompt written notice of any claimed non-conformity in the Product, with a reasonable explanation thereof;

(b) The Product is returned to Avidyne or to an Avidyne authorized service facility;

(c) The Product has not been altered in any manner other than as previously authorized by Avidyne in writing; and

(d) Repairs to the Product have not been made by anyone other than Avidyne or an Avidyne authorized service facility.

This warranty does not apply to any Product which is not installed, maintained and operated in accordance with Avidyne's written instructions or which is otherwise misused, including, without limitation, to any Product which is damaged due to improper installation, maintenance or operation, tampering, alteration of serial numbers or other manufacturers data, lightning or other electrical source, or otherwise.

If warranty protection is applicable to the Product, Avidyne will use reasonable efforts to repair or replace Product within ten (10) business days of its receipt of the Product.

Any Product that has been repaired by Avidyne or replaced by Avidyne under this warranty will be subject to remainder of the original warranty term applicable to the repaired or replaced Product or will be warranted under the warranty terms above for ninety days from the date of repair or replacement, whichever period is longer.

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