GARMIN

G1000™

*primary flight display
pilot's guide for Mooney
M20M & M20R*

Record of Revisions			
Revision	Date of Revision	Revision Page Range	Description
A	10/18/04	3-1 – 3-49	Initial release.

3.1 INTRODUCTION

This Pilot's Guide describes the major features of the Primary Flight Display (PFD) on the G1000 Integrated Cockpit System installed on the Mooney aircraft. The system consists of two 10.4 inch color flat panel displays. During normal operation, the left display is configured as a Primary Flight Display.

The PFD provides increased situational awareness by replacing the traditional "six pack" of instruments in the pilot's panel with an easy-to-scan display that provides a large horizon, airspeed, attitude, altitude, vertical speed, navigation, communication, annunciation, terrain, traffic and lightning information. The PFD also controls the operation of the transponder, the selection of NAV/COM frequencies, audio volume and many navigation features. The operation of these features is explained in other supporting pilot's guide documentation.

The G1000 system controls were designed so that, regardless of which seat the pilot is flying from, the aircraft can be flown with one hand and the controls manipulated by the other hand.

⚠ **WARNING:** *In the event that the airspeed, attitude, altitude, or heading indications become unusable, please refer to the backup instruments.*

The PFD displays the following:

- Navigation Frequency Window
- Navigation Status Bar
- Communication Frequency Window
- Airspeed Indicator
- True Airspeed Box
- Attitude Indicator
- Slip/Skid Indicator
- Horizontal Situation Indicator
- Turn Rate Indicator
- Bearing Pointers
- BRG1 Information Window
- BRG2 Information Window
- Altimeter
- Altitude Reference Box
- Barometric Setting Box
- Vertical Deviation/Glideslope Indicator
- Marker Beacon Receiver Annunciations
- Vertical Speed Indicator
- Alerts Window
- Annunciation Window
- System Time Box
- Transponder Status Bar
- Outside Air Temperature Box
- Inset Map
- Direct-to Window
- Flight Plan Window
- Procedures Window
- Timer/References Window
- Nearest Airports Window
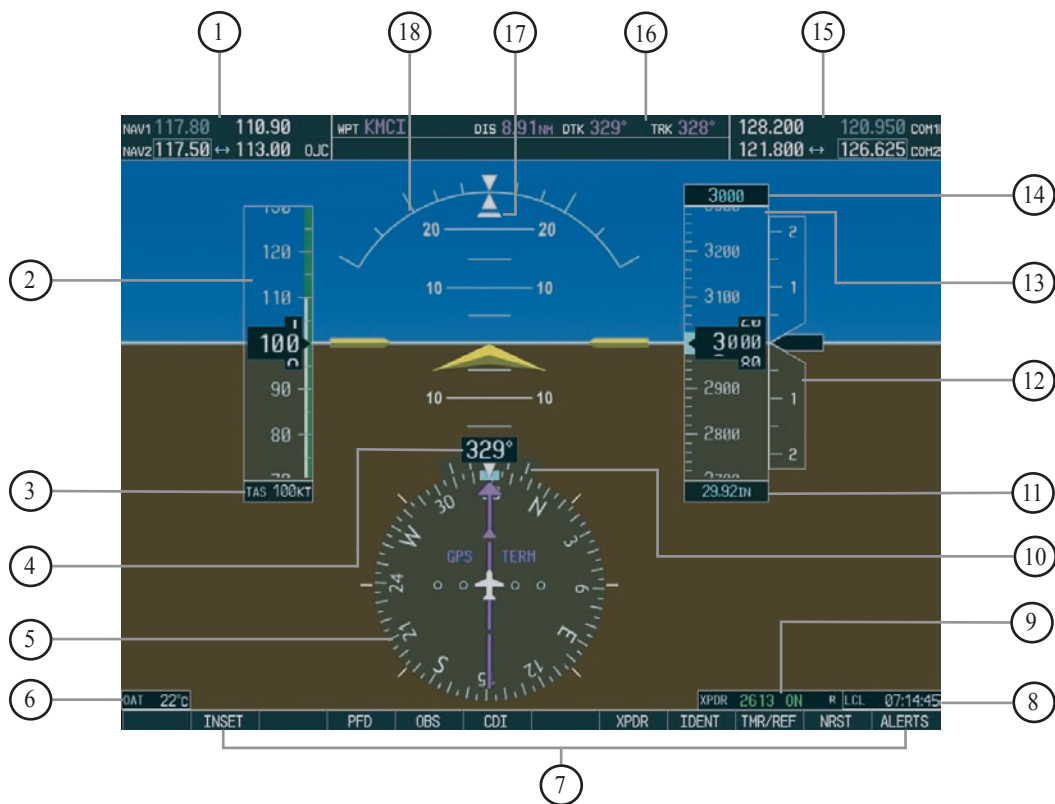
① NAV Frequency Window	⑩ Turn Rate Indicator
② Airspeed Indicator	⑪ Barometric Setting Box
③ True Airspeed Box	⑫ Vertical Speed Indicator
④ Heading Box	⑬ Altimeter
⑤ Horizontal Situation Indicator	⑭ Altitude Reference Box
⑥ Outside Air Temperature Box	⑮ COM Frequency Window
⑦ Softkeys	⑯ Navigation Status Bar
⑧ System Time Box	⑰ Slip/Skid Indicator
⑨ Transponder Status Bar	⑱ Attitude Indicator

Figure 3.1.1 Default PFD Information

1 Traffic Annunciation   6 Alerts Window

2 Selected Heading Box   7 Selected Course Box

3 Inset Map   8 Annunciation Window

4 BRG1 Information Window   9 Vertical Deviation/Glideslope Indicator

5 BRG2 Information Window   10 Marker Beacon Annunciation

Figure 3.1.2 Additional PFD Information

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Garmin G1000 PFD Pilot's Guide for Mooney M20M & M20R

3.2 BACKLIGHTING

The backlighting of both the display and the keys can be adjusted for the PFD and MFD. The backlighting intensity ranges from 0.14% to 100.00%. Two modes exist for adjustment:

- **Auto –** The G1000 adjusts the backlighting automatically with reference to the amount of light in the cockpit (default setting).
- **Manual –** Allows the pilot to manually adjust the backlighting.

> ✓ *NOTE: Except in reversionary mode, the back-lighting can only be adjusted from the PFD.*

> ✓ *NOTE: No other window can be displayed in the lower right corner of the PFD when the **MENU** key is pressed to change the backlighting.*

To manually adjust the backlighting for the PFD and MFD:

1. Press the **MENU** key on the PFD to display the PFD Setup Menu window. 'AUTO' is now highlighted next to 'PFD DSPL'.

2. Turn the **small FMS** knob to display the selection window. Turn the **FMS** knob to select 'MANUAL', then press the **ENT** key.

3. With the intensity value now highlighted, turn the **small FMS** knob to select the desired backlighting, then press the **ENT** key.

4. Turn the **large FMS** knob to highlight 'AUTO' next to 'MFD DSPL', and repeat steps 2 and 3. Press the **CLR** or **MENU** key to remove the window.

To manually adjust the backlighting for the PFD and MFD keys:

1. Press the **MENU** key on the PFD to display the PFD Setup Menu window. 'AUTO' is now highlighted next to PFD DSPL.

2. Turn the **large FMS** knob to highlight 'PFD DSPL'. Turn the **small FMS** knob in the direction of the green arrow to display 'PFD KEY'.

3. Turn the **large FMS** knob to highlight 'AUTO'. Turn the **small FMS** knob to display the selection window. Turn the **FMS** knob to select 'MANUAL', then press the **ENT** key.

4. With the intensity value now highlighted, turn the **small FMS** knob to select the desired backlighting, then press the **ENT** key.

5. Turn the **large FMS** knob to highlight 'MFD DSPL' and turn the **small FMS** knob in the direction of the green arrow to display 'MFD KEY'. Repeat steps 3 and 4. Press the **CLR** or **MENU** key to remove the window.
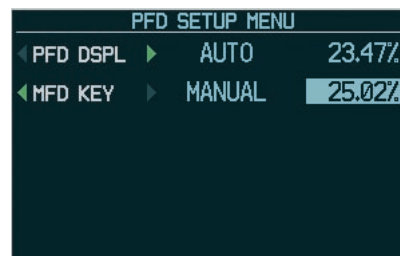

Figure 3.2.1 PFD Setup Menu Window

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3.3 SOFTKEY FUNCTION

When a softkey is turned on, its color changes to black text on gray background and remains this way until it is turned off, at which time it changes to white text on black background. The **CDI**, **IDENT**, **TMR/REF**, **NRST** and **ALERTS** softkeys change momentarily to black text on gray background and automatically switch back to white text on black background.
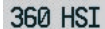
360 HSI   ARC HSI

Figure 3.3.1 Softkey On   **Figure 3.3.2 Softkey Off**

The PFD softkeys listed provide control over flight management functions including GPS, NAV, terrain, traffic and lightning.

INSET – Press to display the Inset Map in the lower left corner of the PFD.
  OFF – Press to remove the Inset Map.
  DCLTR (3) – Press momentarily to select the desired amount of map detail. The declutter level appears adjacent to the **DCLTR** softkey.
  - No declutter: All map features are visible.
  - Declutter – 1: Declutters land data.
  - Declutter – 2: Declutters land and SUA data.
  - Declutter – 3: Declutters large NAV data remaining (removes everything except the active flight plan).
  TRAFFIC – Press to display TIS traffic on the map.
  TOPO – Press to display topographical data (i.e., coastlines, terrain, rivers, lakes, etc.) and elevation scale on the inset map.
  TERRAIN – Press to display terrain information on the inset map.
  LTNG – Press to display the lightning data on the inset map (within a 200 nm radius of the aircraft).
  BACK – Press to return to the previous level softkey configuration.

PFD – Press to display the additional softkeys for additional configurations to the PFD.
  METRIC – Press to display the current and reference altitudes in meters, in addition to feet. Pressing the **METRIC** softkey also changes the barometric setting to hectopascals.
  DFLTS – Press to reset default settings on the PFD.
  BRG1 (bearing) – Press to cycle through the following information:
    NAV1 – Displays NAV1 waypoint frequency or identifier and DME information in the BRG1 information window.
    GPS – Displays GPS waypoint identifier and DME information in the BRG1 information window.
    OFF – Removes the BRG1 information window.
  360 HSI – Press to display the 360° compass rose.
  ARC HSI – Press to display the 140° viewable arcs.
  BRG2 (bearing) – Press to cycle through the following information:
    NAV2 – Displays NAV2 waypoint frequency or identifier and DME information in the BRG2 information window.
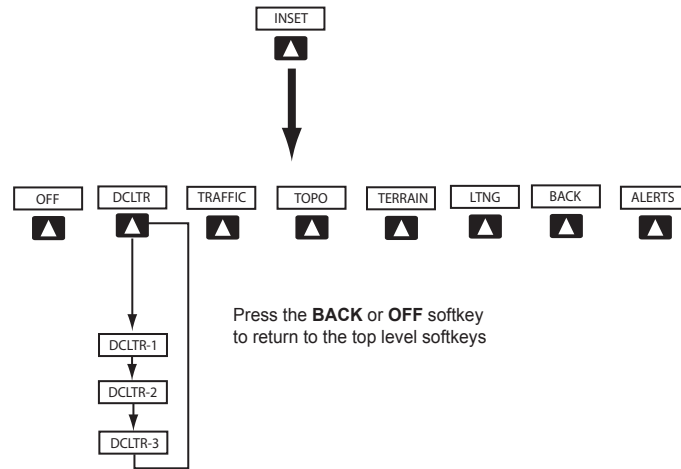   *GPS* – Displays GPS waypoint identifier and DME information in the BRG1 information window.
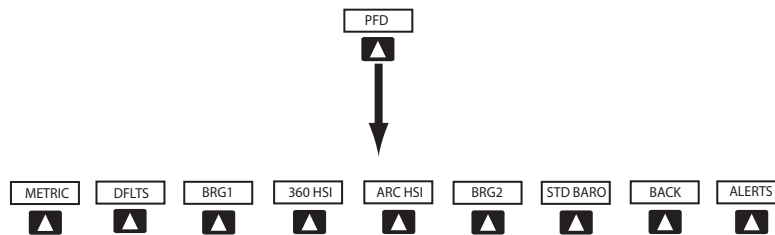   *OFF* – Removes the BRG2 information window.
  STD BARO – Press to set the barometric pressure to 29.92 inches of mercury (1013 hPa by pressing the **METRIC** softkey).
  BACK – Press to return to the previous level softkeys.

CDI – Press to change navigation mode on the CDI between GPS, NAV1 and NAV2.

OBS – Press to select OBS mode on the CDI when navigating by GPS.

XPDR – Press to display the transponder mode selection softkeys.

　STBY – Press to select standby mode.

　ON – Press to select Mode A.

　ALT – Press to select altitude mode (Mode C).

　VFR – Press to automatically enter the VFR code (1200 in the U.S.A. only).

　CODE – Press to display transponder code selection softkeys 0-7.

　　0 through 7 – Press numbers to enter code.

　　IDENT – Press to provide special aircraft position identification to Air Traffic Control (ATC).

　　BKSP – Press to remove numbers entered one at a time.

　　BACK – Press to return to the previous level softkeys.

　IDENT – Press to provide special aircraft position identification to Air Traffic Control (ATC).

　BACK – Press to return to the previous level softkeys.

IDENT – Press to provide special aircraft position identification to Air Traffic Control (ATC).

TMR/REF – Press to display the Timer/References window.

NRST – Press to display the Nearest Airports window.

ALERTS – Press to display the Alerts window.

INSET

OFF DCLTR TRAFFIC TOPO TERRAIN LTNG BACK ALERTS

DCLTR-1

DCLTR-2

DCLTR-3

Press the **BACK** or **OFF** softkey
to return to the top level softkeys

Figure 3.3.3 PFD Softkey Flow Chart – 1

PFD

METRIC DFLTS BRG1 360 HSI ARC HSI BRG2 STD BARO BACK ALERTS

Press the **DFLTS** softkey to change the PFD
metric values to standard

Press the **STD BARO** or **BACK** softkeys
to return to the top level softkeys

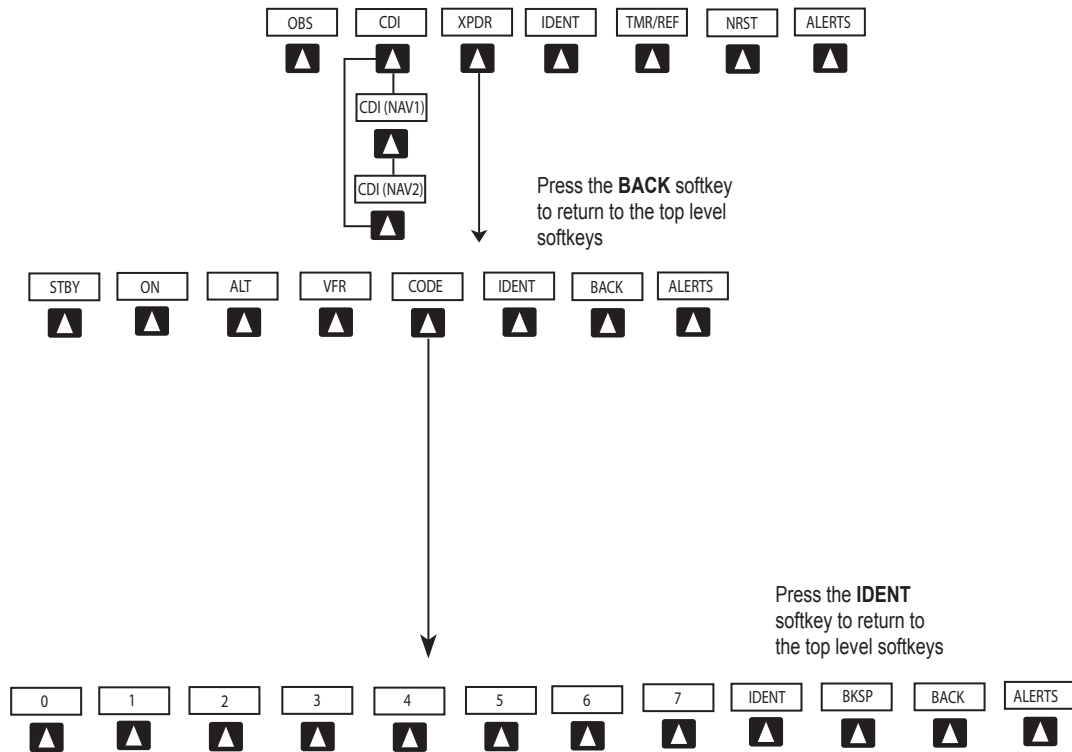**Figure 3.3.4 PFD Softkey Flow Chart – 2**

Figure 3.3.5 PFD Softkey Flow Chart – 3

3.4 FLIGHT INSTRUMENTS

AIRSPEED INDICATOR

The Airspeed indicator displays airspeed on a rolling number gauge using a moving tape. The following information is also displayed:

- Speed indication
- Speed ranges
- Airspeed trend vector
- Vspeed references

Speed Indication

The numeric labels and major tick marks on the moving tape are marked at intervals of 10 knots, while minor tick marks on the moving tape are indicated at intervals of 5 knots. Speed indication starts at 20 knots, with 60 knots of airspeed viewable at one time. The actual airspeed is displayed inside the black pointer. The pointer remains black until reaching never exceed speed (Vne), at which point it turns red.

Speed Ranges

A color-coded (white, green, yellow, and red) speed range strip is located on the moving tape. The colors denote flaps operating range, normal operating range, caution range, and never exceed speed (Vne). A red range is also present for low speed awareness. Refer to the Aircraft Flight Manual Supplement (AFMS) for speed criteria.

Airspeed Trend Vector

The vertical, magenta line extends up or down on the airspeed scale located right of the color-coded speed range strip. The end of the trend vector displays approximately what airspeed will be reached in 6 seconds if the current rate of acceleration is maintained. The trend vector is absent if the speed remains constant and if any data needed to calculate airspeed is not available due to a system failure.

Vspeed References

Vspeeds are set using the **TMR/REF** softkey. Vr, Vx, Vy and Glide are shown on the References window. When active (ON), the Vspeeds are displayed at their respective locations to the right of the airspeed scale (refer to the Auxiliary windows section in this Pilot's Guide to set and display Vspeeds).

True Airspeed Box

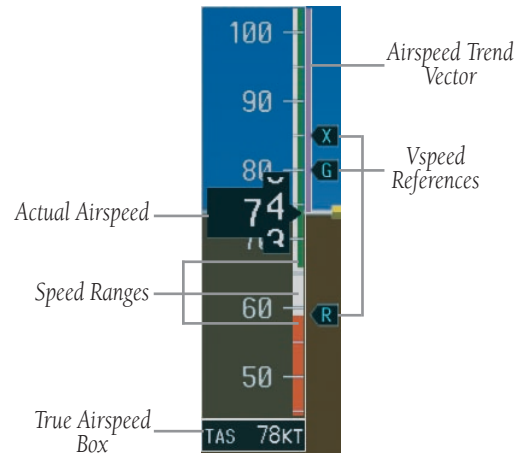The True Airspeed box is located below the Airspeed indicator and displays the true airspeed in knots.
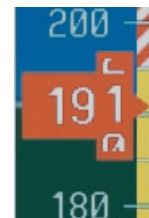

Figure 3.4.1 Airspeed Indicator

Figure 3.4.2 Red Pointer at Vne

ATTITUDE INDICATOR

The attitude information is displayed over a virtual blue sky and brown ground with a white horizon line. The aircraft wing tips are represented by two yellow bars on the horizon line. The yellow inverted "V" represents the aircraft. The Attitude indicator displays the following information:

- Pitch indication
- Roll indication
- Slip/Skid indication

Pitch Indication

Major pitch marks and numeric labels at 10, 20, 30, 40, 50, 60, 70 and 80 degrees are shown above and below the horizon line. Minor pitch marks at 5, 15 and 25 degrees above the horizon line and 5, 15, 25, 35 and 45 degrees below the horizon line are shown. The horizon line is part of the pitch scale. Red extreme pitch warning chevrons pointing toward the horizon are displayed starting at 50 degrees above and 30 degrees below the horizon line (refer to the figures on the next page).
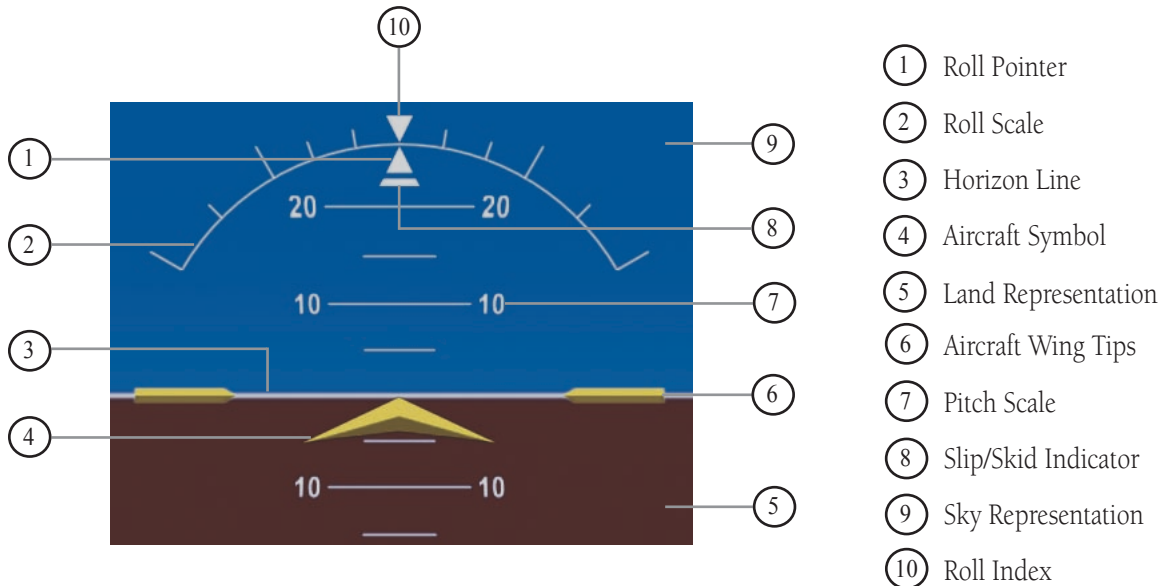

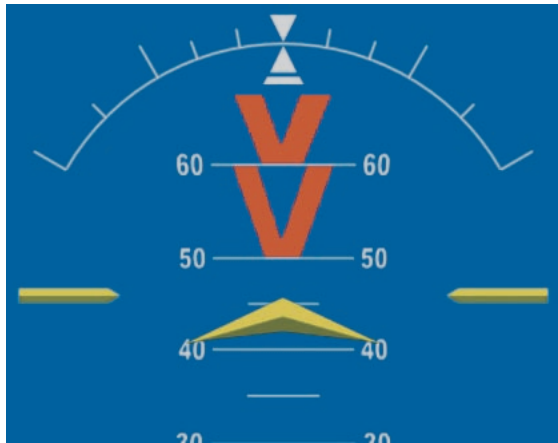|	
1	Roll Pointer
2	Roll Scale
3	Horizon Line
4	Aircraft Symbol
5	Land Representation
6	Aircraft Wing Tips
7	Pitch Scale
8	Slip/Skid Indicator
9	Sky Representation
10	Roll Index

Figure 3.4.3 Attitude Indicator

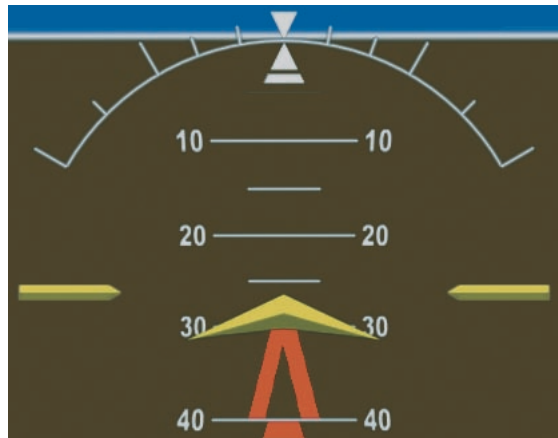**Figure 3.4.4 Attitude Indicator Nose High**

Figure 3.4.5 Attitude Indicator Nose Low

Roll Indication

Major tick marks at 30 and 60 degrees and minor tick marks at 10, 20 and 45 degrees are shown to the left and right on the roll scale. The inverted white triangle indicates 0 on the roll scale. Angle of bank is indicated by the position of the roll pointer on the roll scale.

> *NOTE: Supplemental flight data such as the Inset Map, Alerts and Annunciation window disappear from the PFD when pitch is greater than +30° and less than -20° or when a 65° bank angle is reached.*

Slip/Skid Indication

The Slip/Skid indicator resides beneath the roll pointer. The indicator moves with the roll pointer and moves laterally away from the pointer to indicate lateral acceleration. A slip/skid is indicated by the location of the Slip/Skid indicator relative to the roll pointer. One Slip/Skid indicator displacement is equal to one ball displacement on a traditional Slip/Skid indicator.

ALTIMETER

The Altimeter displays barometric altitude values in feet on a rolling number gauge using a moving tape. The Altimeter displays the following information:

- Altitude values
- Altitude reference bug
- Altitude trend vector
- Altitude reference box
- Barometric setting box
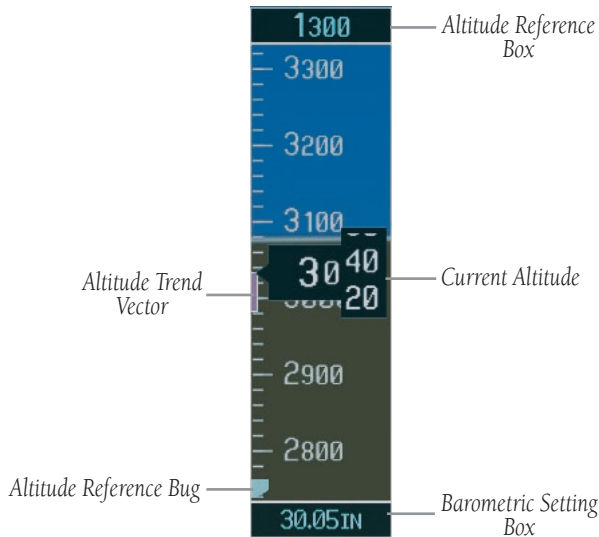- Altitude alerter
- Metric display

Figure 3.4.6 Altimeter

Altitude Values

The numeric labels and major tick marks are shown at intervals of 100 feet. Minor tick marks are at intervals of 20 feet. The current altitude is displayed in the black pointer.

Altitude Reference Bug

The Altitude Reference Bug is displayed at the reference altitude or the edge of the tape (whichever is closer to the current altitude) to provide increased altitude awareness.

To set the altitude reference bug:

1. Turn the **ALT** knobs to set the altitude reference bug. The **small ALT** knob sets the hundreds and the **large ALT** knob sets the thousands. This altitude also appears in the altitude reference box above the altimeter.

Altitude Trend Vector

The vertical magenta line extends up or down the altitude scale located left of the numeric labels. The end of the trend vector displays approximately what altitude will be reached in 6 seconds if the current rate of vertical speed is maintained. The trend vector is absent if altitude remains constant, or if any data needed to calculate it is not available due to a system failure.

Altitude Reference Box

The Altitude Reference box displays the reference altitude in feet. The metric value, when selected, is displayed on top of the Altitude Reference box.

> **NOTE:** The Altitude Reference box is not part of the autopilot altitude preselect system and is used to aid the pilot in altitude control.

Barometric Setting Box

The Barometric Setting Box displays the barometric pressure in inches of mercury (in Hg) or hectopascals (hPa).

To select barometric pressure:

1. Turn the **large BARO** (outer) knob to select the desired setting.

Altitude Alerting

The altitude alerter provides the pilot with a visual alert when approaching the reference altitude. Although flight control systems use the same reference altitude box as the altitude alerter does, the altitude alerter is not coupled to a flight control system and can function without one. The visual annunciations appear in the altitude reference box. Anytime the reference altitude is changed, the altitude alerter is reset.

There is an altitude band set at +/- 1,000 ft of the reference altitude and a deviation band set at +/- 200 ft of the reference altitude. When the pilot climbs or descends to the reference altitude, the reference altitude flashes with cyan text on a black background for 5 seconds, then it changes to black text on a cyan background as the aircraft passes through +/- 1,000 ft of the reference altitude.

When the aircraft passes within +/- 200 ft of the reference altitude, the reference altitude flashes with cyan text on a black background, indicating that the aircraft is within the deviation band. Each time the pilot flies outside the deviation band (+/- 200 ft of the reference altitude), the reference altitude flashes with yellow text on a black background for 5 seconds.
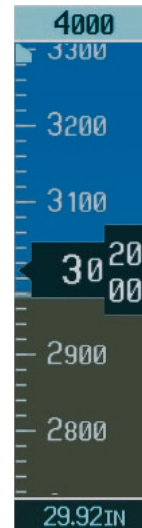

Figure 3.4.8 Altimeter within 1,000 ft of Reference Altitude

Figure 3.4.7 Colors Associated with the Altitude Alerter
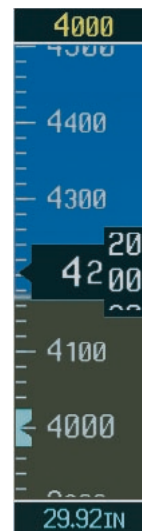

Figure 3.4.9 Altimeter within 200 ft of Reference Altitude

Metric Display

Reference and current altitude can be displayed in meters. The barometric pressure may also be displayed in hectopascals.

To display altitude in meters and barometric pressure in hectopascals:

1. Press the **PFD** softkey to display the second level softkeys.

2. Press the **METRIC** softkey to display altitude in meters and barometric pressure in hectopascals. Press the **BACK** softkey to return to the top level softkeys.
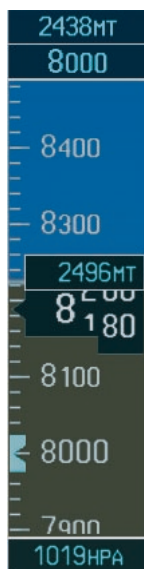

Figure 3.4.10 Altimeter (Metric)

Vertical Deviation/Glideslope Indicator

The Vertical Deviation/Glideslope Indicator is a window on the left side of the Altimeter. The window appears when an ILS is tuned in the active NAV field (and selected on the audio panel). A green diamond appears and acts as the vertical deviation indication, just like a glideslope needle on a conventional indicator.

Marker Beacon Annunciations

Marker Beacon Annunciations are displayed on the PFD to the left of the Altitude Reference Box. Outer marker reception is indicated by a blue light. Middle marker reception is indicated by an amber light. Inner marker reception is indicated by a white light (refer to the Audio Panel Pilot's Guide for more information).
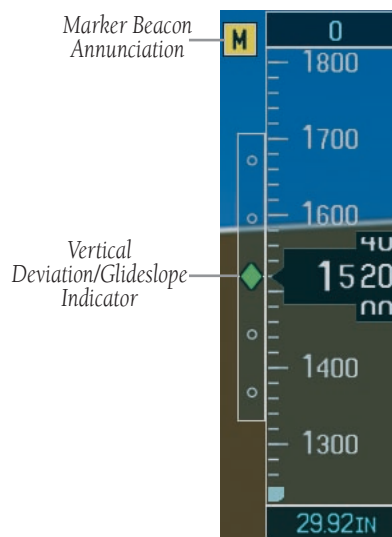

Figure 3.4.11 Marker Beacon and Vertical Deviation

VERTICAL SPEED INDICATOR

The Vertical Speed Indicator displays the aircraft vertical speed with numeric labels and tick marks at 1,000 ft and 2,000 ft in each direction on the non-moving tape. Minor tick marks are at intervals of 500 ft.

Vertical Speed Pointer

The Vertical Speed Pointer displays the current vertical speed and points to that speed on the non-moving tape. If the rate of ascent is greater than 2,000 feet per minute, the pointer appears at the top edge of the non-moving tape and the number of feet per minute appears inside the pointer. If the rate of descent is greater than 2,000 feet per minute, a negative sign is displayed in the pointer (-2,000) for negative (down) vertical speed and the pointer appears at the bottom edge of the non-moving tape.

> ⚠ **NOTE:** Digits appear in the pointer when the climb or descent rate is greater than 100 fpm.
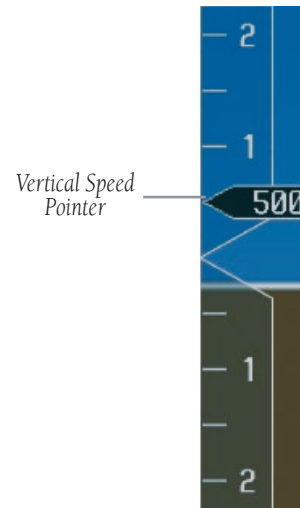

Vertical Speed Pointer

**Figure 3.4.12 Vertical Speed Indicator**

HORIZONTAL SITUATION INDICATOR

The Horizontal Situation Indicator (HSI) displays a rotating compass card with letters at the cardinal points and numeric labels every 30 degrees. Major tick marks are at 10 degree intervals and minor tick marks are at 5 degree intervals. The HSI is displayed in a heading-up orientation. The HSI compass can be displayed as a 360° rose or a 140° arc by pressing the **PFD** softkey, followed by the **360 HSI** or the **ARC HSI** softkey. The HSI displays the following information:

- Heading indication
- Turn Rate indicator
- Course Deviation Indicator
- Bearing pointers (360° HSI only)
- Bearing information windows (360° HSI only)
- Navigation source

360° HSI

The 360° HSI contains a course deviation indicator (CDI), with a course pointer arrow, a TO/FROM arrow, a sliding deviation bar and scale. The course pointer is a single line arrow (GPS, VOR1 and LOC1) or double line arrow (VOR2 and LOC2) which points in the direction of the set course. The TO/FROM arrow rotates with the course pointer and is displayed when the active NAVAID is received.
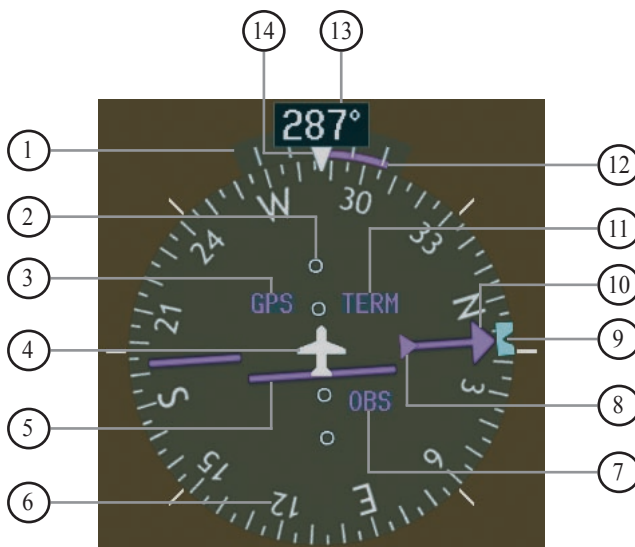
1. Turn Rate Indicator
2. Lateral Deviation Scale
3. Navigation Source
4. Aircraft Symbol
5. Course Deviation Indicator
6. Rotating Compass Rose
7. OBS Mode
8. TO/FROM Indicator
9. Heading Bug
10. Course Pointer
11. Flight Phase
12. Turn Rate and Heading Trend Vector
13. Heading
14. Lubber Line

Figure 3.4.13 Horizontal Situation Indicator

ARC HSI

The Arc HSI is a 140° expanded section of the compass rose. The Arc contains a course pointer arrow, a TO/FROM indicator, a sliding deviation indicator (the TO/FROM and sliding deviation indicators are one and the same), and deviation scale. Upon station passage, the TO/FROM indicator flips and points to the tail of the aircraft just like the conventional TO/FROM flag. Depending on the source of navigation, the CDI on the Arc HSI can appear in the following ways:

- GPS, OBS, VOR – appears as a arrowhead
- Localizer – appears as a diamond

> *NOTE: If the pilot makes a heading change greater than 105° with respect to the course, the CDI switches to the opposite side of the deviation scale and displays reverse sensing.*
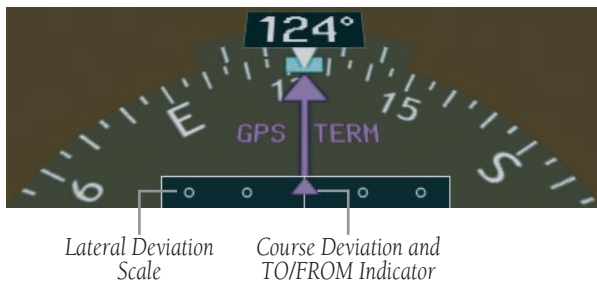

Lateral Deviation Scale   *Course Deviation and TO/FROM Indicator*

Figure 3.4.14 ARC HSI

> *NOTE: When the Arc HSI is displayed, the BRG1 and BRG2 information windows are disabled.*

Heading Indication

A digital reading of the current magnetic heading appears on top of the HSI. A rotatable heading bug on the compass rose and arc marks the desired heading. When the pilot selects a heading, a digital reading appears for 3 seconds in a box left of the lubber line, next to the HSI.
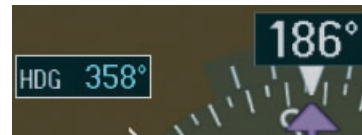

Figure 3.4.15 Selected Heading Box

When the pilot selects a course, a digital reading appears for 3 seconds in a box right of the lubber line, next to the HSI.

Figure 3.4.16 Selected Course Box

> *NOTE: The heading displayed on the HSI is always magnetic, even if the NAV ANGLE is set to 'TRUE' in the AUX System Setup Page on the MFD.*

Turn Rate Indicator

The Turn Rate Indicator resides directly above the rotating compass card. Each tick mark is at 9 (half standard rate) and 18 (standard rate) degrees to the left and right of the lubber line. A wide magenta line displays the current turn rate up to 24 degrees. A magenta arrowhead appears at 25 degrees and disappears at 24 degrees. This trend vector provides the pilot with a six-second prediction of what heading will be reached given the present turn rate.

Figure 3.4.17 Turn Rate Indicator and Trend Vector

Course Deviation Indicator

The Course Deviation Indicator (CDI) moves left or right from the course pointer along a deviation scale to display aircraft position relative to the course.

The CDI has the same angular limits as a mechanical CDI when coupled to a VOR or LOC. When coupled to GPS, the full scale limits for the CDI are defined by a GPS-derived distance (5.0, 1.0 or 0.3 nm). The CDI scale automatically adjusts to the desired limits based upon the current phase of flight (enroute 5.0 nm, terminal area 1.0 nm, or approach 0.3 nm). The desired GPS scale settings may be selected manually from the MFD (refer to the Multi Function Display Pilot's Guide).

Figure 3.4.18 Arc CDI and Compass Rose CDI

Bearing Pointers and Information Windows

There are two bearing pointers available, one or two can be displayed on the HSI. Pressing the PFD softkey provides access to the BRG1 and BRG2 softkeys. BRG1 pointer is a single cyan (light blue) line with an open arrowhead at the end. BRG2 pointer is a double cyan (light blue) line with an open arrowhead at the end. The bearing pointers never override the CDI. When one or more bearing pointers are displayed (but not necessarily visible if there is no data available), a white ring is presented around the center of the compass rose to visually separate the bearing pointer(s) from the CDI.

When a bearing pointer is displayed its associated information window is also displayed. BRG1 information window is displayed to the lower left of the HSI and includes the bearing source (NAV1), a pointer icon, frequency and distance (NAV1 and GPS) to the bearing source. BRG2 information window is displayed to the lower right of the HSI and includes the bearing source (NAV2), a pointer icon, frequency and distance (NAV2) to the bearing source.

If GPS is the bearing source, the active waypoint identifier is displayed in lieu of a frequency. If an active waypoint is not selected, the bearing pointer is removed from the HSI and "NO DATA" is displayed in the information window.

If the NAV radio is the bearing source and is tuned to an ILS frequency, the bearing pointer is removed from the HSI and the frequency is replaced with "ILS". If the NAV radio is not receiving the tuned VOR station, the bearing pointer is removed from the HSI and the frequency displayed in the information window is replaced with "NO DATA".

When NAV1 or NAV2 is the selected bearing source, the frequency is replaced by the station identifier when the station is in range.
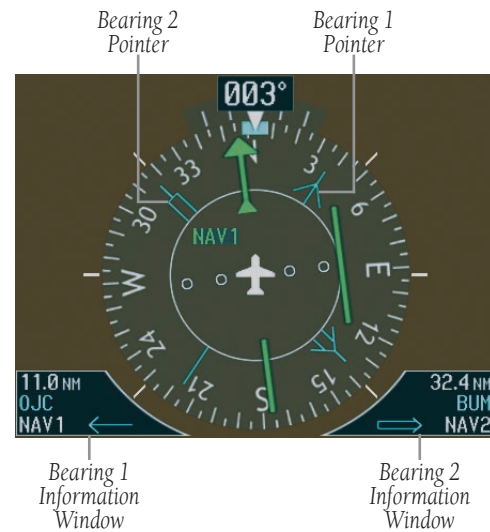

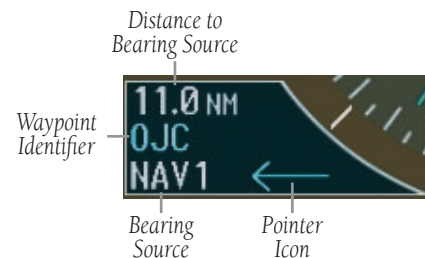**Figure 3.4.19 HSI with Bearing Information**

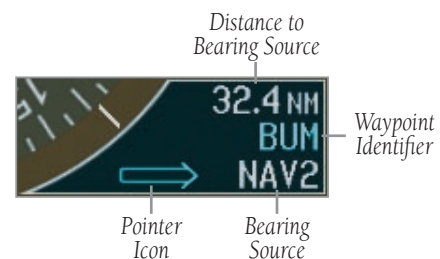**Figure 3.4.20 BRG1 Information Window**

Figure 3.4.21 BRG2 Information Window

Navigation Source

The HSI can display two sources of navigation, GPS or NAV (VOR, localizer, and glideslope). In GPS mode the flight plan legs are sequenced automatically. Enabling OBS mode suspends auto sequencing of waypoints, but retains the current "active-to" waypoint as the navigation reference even after passing the waypoint. When OBS is disabled, the GPS returns to normal operation, with automatic sequencing of waypoints. OBS mode also allows the pilot to set the desired course TO/FROM a waypoint.

Color indicates the current navigation source, magenta (for GPS) or green (for VOR and LOC). As the user crosses the MAP, "SUSP" appears on the HSI in place of OBS and the **OBS** softkey now reads "SUSP", indicating that automatic sequencing of approach waypoints is suspended at the MAP. A yellow 'INTEG' and 'WARN' may appear on the HSI when the following occurs:

- INTEG – RAIM is not available
- WARN – GPS detects a position error

To change between navigation sources:

1. Press the **CDI** softkey to change from GPS to VOR1 or LOC1. This places the cyan tuning box over the NAV1 standby frequency in the upper left corner of the PFD.

2. Press the **CDI** softkey again to change from VOR1 or LOC1 to VOR2 or LOC2. This places the cyan tuning box over the NAV2 standby frequency.

3. Press the **CDI** softkey a third time to return to GPS.

To enable/disable OBS mode while navigating with GPS:

1. Press the **OBS** softkey to select OBS Mode.

2. Turn the **small CRS** knob to select the desired course TO/FROM the waypoint.

3. Press the **OBS** softkey again to return to normal operation.

Figure 3.4.22 GPS INTEG, GPS SUSP, NAV1 and NAV2

3.5 COMMUNICATION, NAVIGATION & SURVEILLANCE

COMMUNICATION FREQUENCY WINDOW

The Communication Frequency window provides the control and display of dual VHF Radio Communication Transceivers (COM1 and COM2). The Communication Frequency window displays the following information:

- COM1 and COM2 active and standby frequencies
- Color-coded indication of the active COM transceiver

> ✓ NOTE: Operating procedures for the Communication Frequency window are located in the VHF NAV/COM Pilot's Guide.

Figure 3.5.1 Communication Frequency Window

NAVIGATION FREQUENCY WINDOW

The Navigation Frequency window provides the control and display of dual VOR/ILS receivers (NAV1 and NAV2). The Navigation Frequency window displays the following information:

- NAV1 and NAV2 active and standby frequencies
- NAV1 and NAV2 identifier, if the active NAV1 or NAV2 frequency is a valid, identified frequency
- Color-coded indication of the active NAV receiver

> ✓ NOTE: Operating procedures for the Navigation Frequency window are located in the VHF NAV/COM Pilot's Guide.
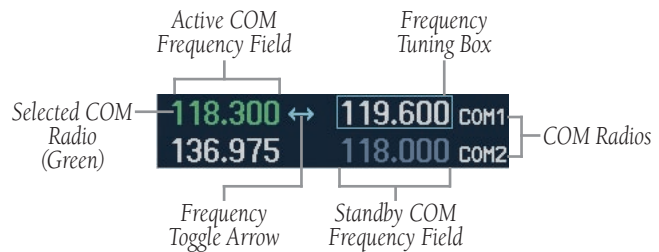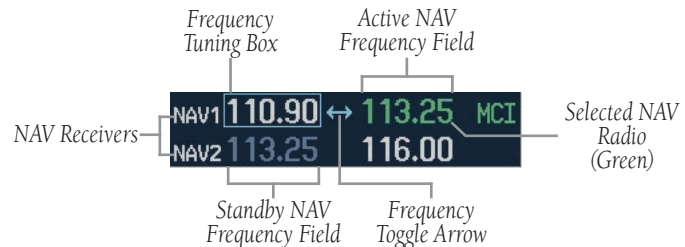

Figure 3.5.2 Navigation Frequency Window

NAVIGATION STATUS BAR

The Navigation Status bar resides at the top of the PFD and displays valuable information while flying a route. The following information is displayed:

- The next waypoint in the active flight plan
- Distance to the next waypoint (DIS)
- Desired track to the next waypoint (DTK)
- Current track angle (TRK)
- GPS Navigation Annunciations

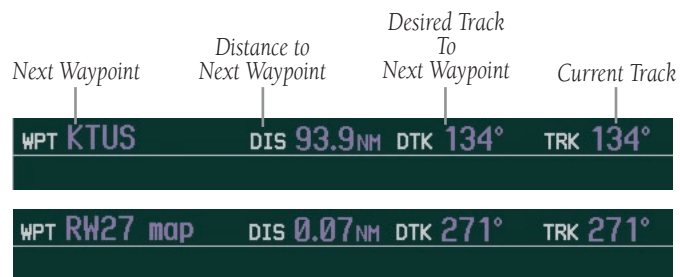*NOTE: The fields in the PFD Navigation Status bar cannot be changed.*
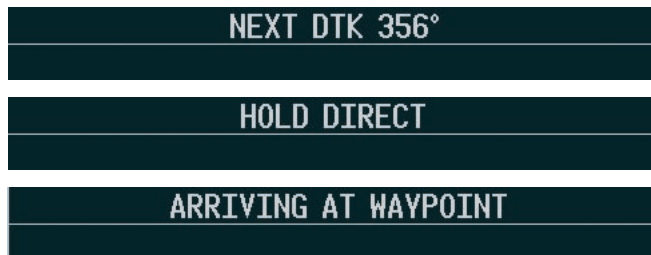

Figure 3.5.3 Navigation Status Bars

Figure 3.5.4 Navigation Status Bar Message

TRANSPONDER STATUS BAR

The Transponder Status bar displays the transponder code, reply symbol, and mode of operation. TIS (Traffic Information System) surveillance data up-linked by Air Traffic Control (ATC) radar through the GTX33 Mode S Transponder appears on the Inset Map (PFD), Navigation and Traffic Map Pages on the MFD (refer to the Multi Function Display Pilot's Guide). If the transponder is configured with Automated Airborne Determination, normal operation begins when lift-off is sensed. When the aircraft is on the ground, the window automatically displays "GND". The transponder does not respond to AT-CRBS interrogations when GND is annunciated. If a delay time is set in Configuration Mode, the transponder waits a specified length of time after landing before changing to GND mode.

Transponder Operation

Pressing the **XPDR** softkey displays the second-level softkeys:

- **STBY –** Selects standby mode. When in standby mode, the transponder does not reply to any interrogations.
- **ON –** Selects Mode A. In this mode, the transponder replies to interrogations, as indicated by the Reply Symbol (R). Replies do not include altitude information.
- **ALT –** Selects Mode C. In ALT mode, the transponder replies to identification and altitude interrogations, as indicated by the Reply Symbol (R). Replies to altitude interrogations include the standard pressure altitude received from an external altitude source (not adjusted for barometric pressure). The ALT mode may be selected in aircraft not equipped with an optional altitude encoder; however, in this case, the reply signal only replies to mode A interrogations. The transponder also responds to interrogations from TCAS-equipped aircraft.

- **VFR –** Sets the transponder code to the pre-programmed VFR code selected in Configuration Mode (this is set to 1200 at the factory in the U.S.A. only; please refer to ICAO standards for VFR codes in other countries).
- **CODE –** Displays the transponder code selection softkeys, which includes the digits **0-7** and **BKSP**.
- **IDENT –** Pressing the **IDENT** softkey activates the Special Position Identification (SPI) Pulse for 18 seconds, identifying the transponder return on the ATC screen.

Transponder Code Selection

Transponder code selection is performed with eight softkeys (0-7) providing 4,096 active identification codes. Pushing one of these softkeys begins the code selection sequence. The new code is activated five seconds after the fourth digit is entered. Pressing the **BKSP** softkey removes one digit at a time until the status bar is empty (refer to the Mode S Transponder Pilot's Guide).

Figure 3.5.5 Transponder Status Bar

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3.6 SUPPLEMENTAL FLIGHT DATA

OUTSIDE AIR TEMPERATURE BOX

The outside air temperature (OAT) is displayed in °C. On the AUX System Setup Page of the MFD OAT can be configured to display °F instead of °C (refer to the Multi Function Display Pilot's Guide).

Figure 3.6.1 Outside Air Temperature Box

SYSTEM TIME BOX

The System Time Box displays the local time. Time and date is obtained from the satellites and cannot be changed. The pilot may select the desired time format and offset. There are 3 time formats available: Local 12 hr, Local 24 hr and Coordinated Universal Time (UTC). The Time Offset (Time Zone) represents the number of hours plus or minus UTC (refer to the Multi Function Display Pilot's Guide).

Figure 3.6.2 System Time Box

TRAFFIC ANNUNCIATION

The G1000 system displays Traffic Information Service (TIS) traffic on the Inset Map (PFD) and the Navigation Map Page (MFD). When a traffic advisory is detected, the following automatically occurs:

- The Inset Map is enabled and displays the traffic.
- A single "TRAFFIC" voice message is heard.
- A flashing "TRAFFIC" annunciation appears to the top left of the Attitude indicator. This alert flashes (black text on yellow background) for 5 seconds and remains displayed until no TAs are detected in the area.

> *NOTE: If a second TA appears or if the TAs displayed decrease and then increase, a new audio alert is heard and a new visual alert is displayed.*

> *NOTE: Refer to the Appendix for detailed information on the Traffic Information Service (TIS).*

Figure 3.6.3 Traffic Annunciation

INSET MAP

The Inset Map is a smaller version of the Navigation Map Page on the MFD. It appears in the lower left corner of the PFD and is displayed by pressing the **INSET** soft-key. The map disappears from the PFD anytime pitch is greater than +30° and less than –20°, or when a 65° bank angle is reached. The direct-to function is not available from the Inset Map. The fuel reserve rings are enabled and disabled from the MFD only. The Inset Map displays the following information:

> *NOTE: The map orientation is always the same as that for the Navigation Map Page on the MFD.*

- Moving map with orientation references
  - North Up
  - Track Up
  - DTK Up
  - HDG Up
- Zoom range legend
- Declutter levels (3)
- Aircraft icon
- Traffic data
- Topo data
- Terrain data
- Lightning data (optional)
- Enabled map features
- Active navigation route
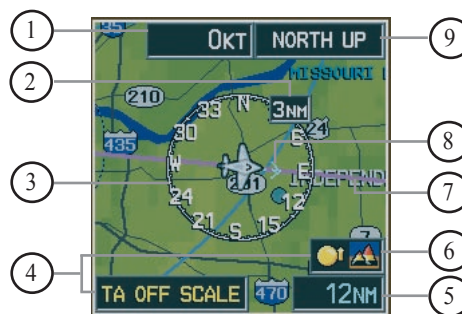- Track vector
- Fuel ring (reserve)

> *NOTE: Map orientation and other map features are enabled on the MFD (refer to the Multi Function Display Pilot's Guide).*

> *NOTE: Refer to the Multi Function Display Pilot's Guide for a detailed explanation of the declutter levels.*

The following Inset Map operations can be performed and are independent of the MFD:

- Change the zoom range
- Change the declutter level
- Enable/disable traffic data
- Enable/disable topo data
- Enable/disable terrain data
- Enable/disable lightning data (optional)
- Pan Map

1. Wind Vector
2. NAV Compass Range
3. NAV Compass
4. Traffic Icon and Scale
5. Map Range
6. Terrain Icon
7. Active Navigation Route
8. Track Vector
9. Map Orientation

Figure 3.6.4 Inset Map

To change the zoom range:

1.   Turn the **joystick** clockwise to increase or counterclockwise to decrease the range. Zoom ranges from 500 feet to 2,000 nautical miles.

To change the declutter level:

1.   Press the **INSET** softkey. Press the **DCLTR** softkey to remove background map details until the desired amount of detail is depicted. The declutter level appears above the softkey (i.e., DCLTR-1). Refer to the Multi Function Display Pilot's Guide for more details.

To enable/disable traffic data:

1.   Press the **INSET** softkey.   Press the **TRAFFIC** softkey to display Traffic Information Service (TIS) traffic. Traffic symbology appears next to the aircraft icon and in the bottom right corner of the map.

2.   Press the **TRAFFIC** softkey again to remove data from the map.

NOTE: TIS displays traffic within seven nautical miles from 3,000 ft below to 3,500 ft above the requesting aircraft, and includes location, direction, altitude, and climb/descent information.

When a traffic advisory is detected the following automatically occurs:

• The Inset Map is enabled and displays the traffic.
• A single "TRAFFIC" voice message sounds.
• A flashing "TRAFFIC" annunciation appears to the top left of the Attitude Indicator. This alert flashes (black text on yellow background) for 5 seconds and remains displayed until no TAs are detected in the area.

NOTE: If a second TA appears or if the TAs displayed decrease and then increase, a new audio is heard and an alert is displayed.

NOTE: Refer to the Appendix for more details about Traffic Information Service (TIS).

To enable/disable topo data:

1.   Press the **INSET** softkey. Press the **TOPO** softkey to display topographic land colors, which represent land elevation.

2.   Press the **TOPO** softkey again to remove topo data from the map.

NOTE: When topo data is removed from the display, all cartographic data is automatically removed and the Jeppesen Nav Data is presented on a black background.

To enable/disable terrain data:

1.   Press the **INSET** softkey.   Press the **TERRAIN** softkey to display color-coded terrain tiles, which are based upon the aircraft current altitude. A mountain icon appears above the zoom range in the lower right corner of the map, showing that terrain is selected.

• **Red** (warning) – Land elevation is within 100 ft or above the aircraft current altitude.

• **Yellow** (caution) – Land elevation is greater than 100 ft to 1,000 ft below aircraft altitude.

• **Black** – Land elevation greater than 1,000 ft below aircraft altitude.

2.   Press the **TERRAIN** softkey again to remove the terrain data from the map.

NOTE: Terrain data is not displayed when the aircraft latitude is greater than 75˚ North or 60˚ South.

NOTE: Refer to the Appendix for more details about terrain.

To enable/disable lightning data (optional):

1. Press the **INSET** softkey. Press the **LTNG** softkey to display WX-500 Stormscope data on the map within a 200 nm radius of the aircraft. A lightning bolt icon appears above the map range on the map.

2. Press the **LTNG** softkey again to remove lightning data from the map.

> **NOTE:** *Refer to the Multi Function Display Pilot's Guide for more details about lightning data.*

To pan the map:

> **NOTE:** *The joystick on the PFD operates independently from the one on the MFD.*

1. Push in the **joystick** to display the panning pointer. This allows the pilot to move the map beyond its current limits without adjusting the range.

2. Push in and move the **joystick** to pan the map in the general direction of the desired location. When the pointer is placed on an object, the name of the object is highlighted for approximately 4 seconds (even if the name was not originally displayed on the map). This feature applies to everything displayed on the map except for route lines.

3. Push in the **joystick** again to cancel the panning function and return to the present position on the map.

> **NOTE:** *The airspace boundary stays highlighted for approximately 4 seconds before returning to normal shading.*

WORKING WITH MENUS

Much of the G1000 operation is accomplished using a menu interface. The G1000 has a bezel-mounted dedicated **MENU** key that, when pressed, displays a context-sensitive list of options. This option list allows the pilot to access additional features or make setting changes which specifically relate to the currently displayed window. There is no all-encompassing menu. Some menus provide access to additional sub-menus that are in turn used to view, edit, select and review options.

Once the Page Menu window is displayed, turn the **FMS** knob to scroll through a list of available options (a scroll bar always appears to the right of the window when the option list is longer than the window) and press the **ENT** key to select the desired option. The **CLR** key may be pressed to remove the menu and cancel the operation. Pressing the **FMS** knob also removes the displayed menu.
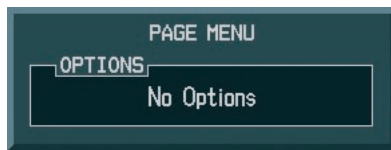

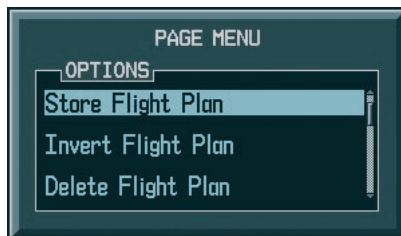**Figure 3.6.5 Page Menu – No Options With NRST Window Displayed**

Figure 3.6.6 Page Menu – Options With FPL Window Displayed

NOTE: Pressing the softkeys does not display a menu or sub-menu.

AUXILIARY WINDOW KEYS

The main keys which are used in association with the PFD Auxiliary window operations are listed below:

- **DIRECT-TO –** Activates the direct-to function, and allows the user to enter a destination waypoint and establishes a direct course to the selected destination (specified by identifier chosen from the active route).
- **FPL –** Displays the active Flight Plan Page for creating and editing the active flight plan or accessing stored flight plans.
- **CLR –** Erases information, cancels an entry, or removes page menus.
- **MENU –** Displays a context-sensitive list of options. This option list allows the user to access additional features or make setting changes which relate to certain pages.
- **PROC –** Selects approaches, departures and arrivals for the flight plan. When using a flight plan, available procedures for departure and/or arrival airport are offered automatically. If a flight plan is not used, the desired airport, then the desired procedure may be selected. This key selects IFR departure procedures (SIDs), arrival procedures (STARs) and approaches (SIAPs) from the database and loads them into the active flight plan.
- **ENT –** Accepts a menu selection or data entry. This key is used to approve an operation or complete data entry. It is also used to confirm information.

NOTE: Pressing the softkeys does not display a menu or sub-menu.

AUXILIARY WINDOWS

The lower right area of the PFD is a shared area that, at any one time, can present the following windows:

- TIMER/REFERENCES
- NEAREST
- DIRECT-TO
- FLIGHT PLAN
- PROCEDURES

Timer/References Window

The Timer/References window is enabled and disabled by pressing the **TMR/REF** softkey. The following Vspeeds and Vspeed bugs can be set using the Timer/References window:

- Generic timer
- Timer direction (count UP or DOWN)
- START, STOP or RESET
- Best glide speed reference
- Best glide speed bug (ON, OFF)
- Rotation speed reference (Vr)
- Vr bug (ON, OFF)
- Best angle-of-climb speed reference (Vx)
- Vx bug (ON, OFF)
- Best rate-of-climb speed reference (Vy)
- Vy bug (ON, OFF)

> ⚠ *NOTE: Refer to the Aircraft Flight Manual Supplement (AFMS) for limitations.*

Generic Timer

The Generic Timer contains hours, minutes and seconds fields, timer direction (count UP or DOWN), and timer status START, STOP or RESET.

To change the Generic Timer:

1. Press the **TMR/REF** softkey, then turn the **large FMS** knob to select the time field (hh/mm/ss). Turn the **FMS** knobs to set the desired time, then press the **ENT** key. The UP/DOWN field is now highlighted.

2. Turn the **small FMS** knob to display the UP/DOWN window. Turn the **FMS** knob to select 'UP' or 'DOWN', then press the **ENT** key. 'START?' is now highlighted.

3. Press the **ENT** key to START, STOP, or RESET the timer (if the timer is counting DOWN, it must be reset manually). Press the **CLR** key or the **TMR/REF** softkey to remove the window.
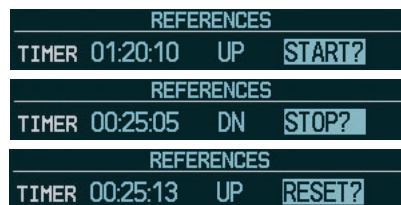

Figure 3.6.7 Timer Status Prompts

Vspeeds and Vspeed Bug Status

Vspeed values for the aircraft can be found in the Aircraft Flight Manual (AFM). The Vspeeds can be changed and the Vspeed bug can be turned ON or OFF.
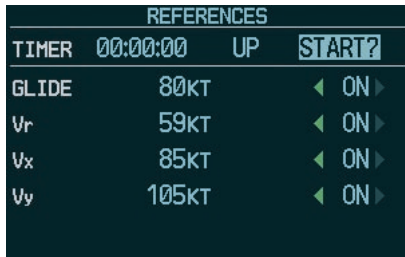

Figure 3.6.8 Timer/References Window

To change Vspeeds and turn the Vspeed bug ON or OFF:

1. Press the **TMR/REF** softkey, then turn the **large FMS** knob to highlight the field of the Vspeed to be changed.

2. Turn the **small FMS** knob to select the desired speed and press the **ENT** key (when a speed has been changed, an asterisk appears next to the speed). The ON/OFF field is now highlighted.

3. To change each setting individually, turn the **small FMS** knob to display the selection window. Turn the **FMS** knob to select the desired setting and press the **ENT** key.

4. All Vspeed references can be changed simultaneously by pressing the **MENU** key and selecting 'All References ON' or 'All References OFF', then by pressing the **ENT** key.

To restore all defaults:

1. From the Timer/References window, press the **MENU** key, then turn the **FMS** knob to highlight 'Restore Defaults' and press the **ENT** key. Press the **TMR/REF** softkey to remove the window.

NOTE: *Default settings are automatically restored when power is cycled.*

Nearest Airports Window

The Nearest Airports window is enabled and disabled by pressing the **NRST** softkey. The Nearest Airports window displays the 25 nearest airports with the following information:

- Identifier
- Airport Symbol
- Bearing to
- Distance from
- Best approach available
- Primary communications frequency
- Length of longest hard surface runway (or soft surface, if no hard surface runway exists)

NOTE: *From the Nearest Airports window, information for a selected airport can be viewed, the active primary communications frequency can be selected, and direct-to navigation can be activated.*
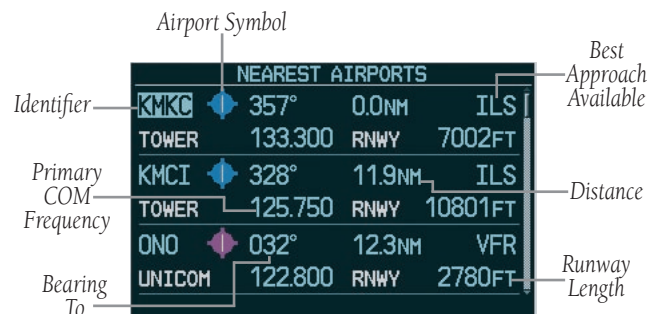

Figure 3.6.9 Nearest Airports Window

To view information about an airport:

1. Press the **NRST** softkey to display a list of the Nearest Airports.

2. Turn the **FMS** knob to select the desired airport and press the **ENT** key.

3. The airport information is displayed with 'BACK' highlighted at the bottom of the window. When finished viewing the airport information, press the **ENT** key to return to the nearest airports list.
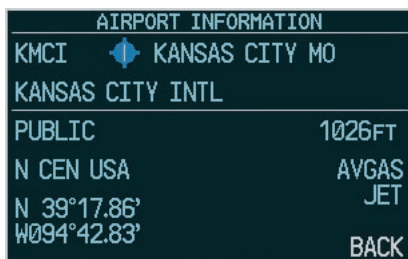

Figure 3.6.10 Airport Information Window

To select an airport by the airport identifier, location, and name fields from the Airport Information window:

1. From the Nearest Airport window, turn the **large FMS** knob to highlight the desired field.

2. Turn the **FMS** knobs to select the desired location, then press the **ENT** key.

3. Turn the **large FMS** knob to highlight 'BACK', then press the **ENT** key.

To activate a Direct-to from the Nearest Airports window:

1. From the Nearest Airports window, turn the **large FMS** knob to highlight the desired airport, then press the **Direct-to** key. The Direct-to window appears. Press the **ENT** key twice to activate.

To activate a Direct-to from the Airport Information window:

1. From the Airport Information window, press the **Direct-to** key.

2. Press the **ENT** key twice to activate.

To select a COM frequency:

1. From the Nearest Airports window, turn the **large FMS** knob to highlight the desired frequency, then press the **ENT** key. The frequency is tuned in the standby COM frequency field selected by the tuning box.

Direct-to Window

The Direct-to window is enabled and disabled by pressing the **Direct-to** key. The currently selected waypoint displays the following information:

- Identifier
- Waypoint symbol
- Waypoint location
- Facility name
- Flight plan waypoint list
- Nearest waypoint List
- Bearing to waypoint
- Distance from waypoint
- Latitude/longitude
- Course to selected waypoint

Direct-to Navigation

Selection of a waypoint for Direct-to navigation may be done in the following ways:

- By specifying the identifier, waypoint location or facility name
- By selecting from a list of waypoints in the active flight plan
- By selecting from a list of the 25 nearest airports

To select a Direct-to by identifier:

1. Press the **Direct-to** key, then turn the **FMS** knobs to select the desired waypoint identifier. Press the **ENT** key to confirm the selection. Press the **ENT** key again to activate the direct-to.

```
          DIRECT TO
KPHX    ◆  PHOENIX AZ
PHOENIX SKY HARBOR INTL
FPL NONE         NRST KMKC
BRG 250°        N 33°26.09'
DIS 909NM       W112°00.58'
CRS 231°            ACTIVATE?
```

Figure 3.6.11 Direct-to Window

> *NOTE: When entering an all-letter/alphabetical airport identifier (only in the USA), the pilot must precede it with the letter "K" (KMCI). If the airport identifier is alpha-numeric, simply enter the three-digit identifier (51K). The full ICAO identifier must be entered for all waypoints.*

To select a Direct-to by city or facility name:

1. Press the **Direct-to** key, then turn the **large FMS** knob to highlight the city field (to the right of the identifier) or facility field (directly below the identifier) field.

2. Turn the **FMS** knobs to enter the city (to the right of the identifier field), or the facility (directly below the identifier field). Once the desired city or facility name is displayed, press the **ENT** key to confirm the selection. Press the **ENT** key again to activate the direct-to.

To select a Direct-to from a list of waypoints in an active flight plan:

1. Press the **Direct-to** key, then turn the **large FMS** knob to highlight the FPL field.

2. Turn the **small FMS** knob to display a selection window showing all waypoints in the active flight plan.

3. Turn the **FMS** knob to scroll through the list and highlight the desired waypoint, then press the **ENT** key. Press the **ENT** key again to activate the direct-to.

To select a Direct-to from the Nearest Airports list:

1. Press the **Direct-to** key, then turn the **large FMS** knob to highlight the NRST field.

2. Turn the **small FMS** knob to display a selection window showing the 25 nearest airports.

3. Turn the **FMS** knob to scroll through the list and highlight the desired airport, then press the **ENT** key. Press the **ENT** key again to activate the direct-to.

To select a specific course to a waypoint:

1. Press the **Direct-to** key, then turn the **FMS** knobs to select the desired destination waypoint, then press the **ENT** key.

2. Turn the **large FMS** knob to highlight the 'CRS' field. Turn the **FMS** knobs to select the desired course and press the **ENT** key.

3. Press the **ENT** key to activate the direct-to using the selected course to the destination.

To cancel a Direct-to:

1. Press the **Direct-to** key, then press the **MENU** key to display the Direct-to Options menu.

2. Press the **ENT** key to cancel direct-to navigation. If a flight plan is still active, the G1000 resumes navigating the flight plan along the closest leg.
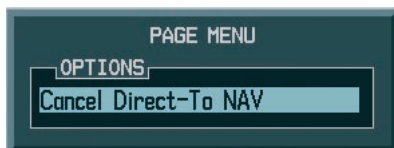

Figure 3.6.12 Cancel Direct-To NAV

Flight Plan Window

The Flight Plan window is enabled and disabled by pressing the **FPL** key. Flight plans can be created, edited and activated from the PFD. The G1000 allows for the creation up to 99 flight plans, with up to 31 waypoints in each flight plan.

The Flight Plan window on the PFD displays the following information:

- Flight plan title
- Indication of the active leg (magenta line and arrow)
- List of waypoints in the flight plan, including the airport identifiers
- Leg distance
- Leg desired track

The following options are available for the Flight Plan window:

- Activate Leg
- Store Flight Plan
- Invert Flight Plan
- Delete Flight Plan
- Load Departure
- Load Arrival
- Load Approach
- Remove Departure
- Remove Arrival
- Remove Approach
- Closest Point of FPL
- Change Fields
- Restore Defaults

The following options are not available for the Flight Plan window from the PFD:

- Load communication frequency
- Select from a stored flight plan list

Figure 3.6.13 Flight Plan Window

Create New Flight Plan

New flight plans can be created on the PFD and MFD. The system can store up to 99 flight plans with up to 31 waypoints in each flight plan.

To create a new flight plan:

1. Press the **FPL** key, then press the **FMS** knob to activate the cursor. The waypoint field is now highlighted.

2. Turn the **small FMS** knob to activate the Waypoint Information window.

3. Turn the **FMS** knobs to enter the identifier of the airport/waypoint and press the **ENT** key. The system returns to the Flight Plan window, with the cursor flashing on the next waypoint field.

4. Repeat step 3 above to enter the identifier for each additional waypoint.

> *NOTE: An 'active' flight plan is created as soon as the first two waypoints are entered on the Active Flight Plan Page.*

Activate Leg

Activate leg selects the highlighted leg as the "active leg" (the flight plan leg which is currently used for navigation guidance).

To activate a flight plan along a specific leg:

1. From the active Flight Plan window, press the **FMS** knob to activate the cursor, and turn the **large FMS** knob to highlight the desired destination waypoint.

2. Press the **MENU** key, highlight 'Activate Leg' and press the **ENT** key. A confirmation window is displayed with 'ACTIVATE' highlighted. Press the **ENT** key.
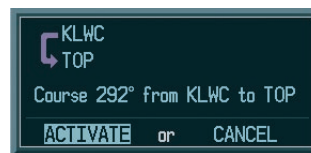

Figure 3.6.14 Activate Leg Confirmation Window

Store Flight Plan

The active flight plan is erased either when the unit is turned off, or when another flight plan is activated. When storing flight plans with an approach, a departure or, an arrival, the G1000 uses the waypoint information from the current database to define the waypoints. If the navigation database is changed or updated, the G1000 automatically updates the information if the procedure has not been modified. If an approach, a departure or, an arrival procedure is no longer available, the flight plan becomes locked until the procedure is deleted from the flight plan, or until the correct navigation database is installed.

To store a flight plan:

1. From the Flight Plan window, once all of the waypoints have been entered, press the **MENU** key to display the page menu options.

2. Turn the **FMS** knob to select 'Store Flight Plan', then press the **ENT** key. The Store Flight Plan window is displayed with 'OK' highlighted. Press the **ENT** key to store the flight plan.

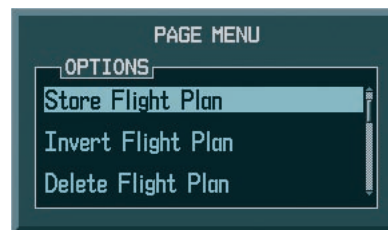3. To cancel, turn the **large FMS** knob to highlight 'CANCEL' and press the **ENT** key.

Figure 3.6.15 Page Options Menu

Invert Flight Plan

Invert Flight Plan reverses the active flight plan. After traveling along a flight plan, the pilot may wish to reverse the route for navigation back to the original departure point.

To activate an existing flight plan in reverse:

1. From the Flight Plan window, press the **MENU** key to display the page menu options.

2. Turn the **FMS** knob to highlight 'Invert Flight Plan', then press the **ENT** key. The flight plan is now reversed and activated.
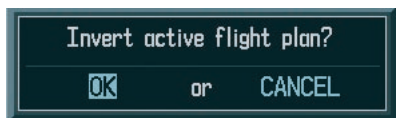
Figure 3.6.16 Invert Flight Plan Confirmation Window

Delete Flight Plan

The entire flight plan or selected waypoints within the flight plan may be deleted.

To delete the entire flight plan:

1. From the Flight Plan window, press the **MENU** key to display the page menu options.

2. Turn the **FMS** knob to highlight 'Delete Flight Plan', then press the **ENT** key. The 'Delete All Waypoints in Flight Plan' message is displayed with 'OK' highlighted. Press the **ENT** key to delete all waypoints in the flight plan.

3. To cancel, turn the **large FMS** knob to highlight 'CANCEL' and press the **ENT** key.

To delete selected waypoints in the flight plan:

1. From the Flight Plan window, turn the **large FMS** knob to select the desired waypoint.

2. Press the **CLR** key. The 'Remove Waypoint Name' window is displayed with 'OK' highlighted. Press the **ENT** key to delete the selected waypoint.

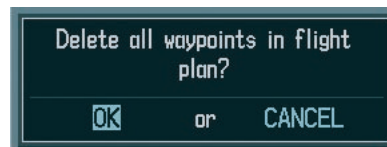3. To cancel, turn the **large FMS** knob to highlight 'CANCEL' and press the **ENT** key.

Figure 3.6.17 Delete Flight Plan Confirmation Window

Load Departure

Load departure allows the pilot to select a published standard instrument departure (SID) for the departure airport, or replace the current departure with a new selection. When using a direct-to, the G1000 uses the nearest airport as a reference when displaying available departures.

> **NOTE**: *The **PROC** key can also be used to load a departure, an approach, or an arrival.*

To select a departure for the departure airport:

1. From the Flight Plan window , press the **MENU** key to display the page menu options.

2. Turn the **FMS** knob to highlight 'Load Departure', then press the **ENT** key. A window appears listing the available departures for the departure airport.

3. Turn the **FMS** knob to select the desired departure, then press the **ENT** key.

> **NOTE:** *This runway window is not displayed for every departure. 'ALL' may appear in the runway field, indicating that the departure procedure applies to all runways. For airports with parallel runways, 'B' may appear at the end of the runway designation to indicate that the departure procedure applies to both runways.*

4. A window may appear listing runways for the departure. Turn the **FMS** knob to select the desired runway, then press the **ENT** key. The transition window is now displayed.

5. Turn the **FMS** knob to select the desired transition waypoint, then press the **ENT** key. With 'LOAD?' highlighted, press the **ENT** key.
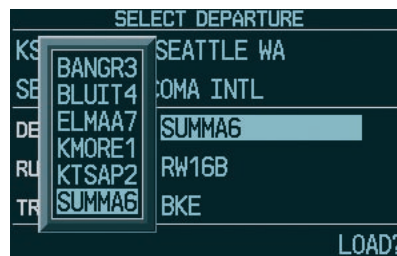

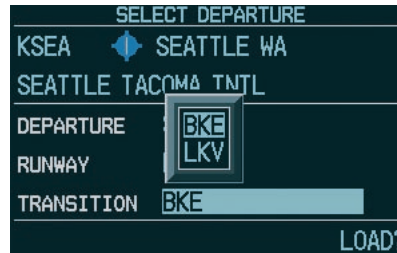**Figure 3.6.18 Departure**

Figure 3.6.19 Departure Runway

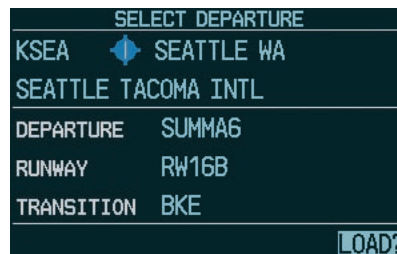

Figure 3.6.20 Departure Transition

Figure 3.6.21 Select Departure Window

Load Arrival

Load Arrival allows the pilot to select a published standard terminal arrival route (STAR) for the destination airport, or replace a current arrival with a new selection.

> ✓ *NOTE: The **PROC** key can also be used to load a departure, an approach, or an arrival.*

To select an arrival for a direct-to or flight plan destination airport:

1. From the Flight Plan window, press the **MENU** key to display the page menu options.

2. Turn the **FMS** knob to highlight 'Load Arrival', then press the **ENT** key. A window appears listing the available arrivals for the destination airport.

3. Turn the **FMS** knob to select the desired arrival, then press the **ENT** key. A window appears listing available transitions for the arrival.

4. Turn the **FMS** knob to select the desired transition waypoint, then press the **ENT** key.

> ✓ *NOTE: This runway window is not displayed for every arrival. 'ALL' may appear in the runway field, indicating that the arrival procedure applies to all runways. For airports with parallel runways, 'B' may appear at the end of the runway designation to indicate that the arrival procedure applies to both runways.*

5. A window may appear listing runways for the arrival. Turn the **FMS** knob to select the desired runway, then press the **ENT** key. With 'LOAD?' highlighted, press the **ENT** key.

> ✓ *NOTE: When adding an arrival to an active flight plan, the pilot may need to remove a duplicate destination waypoint from the flight plan list.*

Load Approach

Load Approach allows the pilot to select a published instrument approach for the destination airport, or replace the current approach with a new selection.

To select an approach for a direct-to or flight plan destination airport:

1. From the Flight Plan window, press the **MENU** key to display the page menu options.

2. Turn the **FMS** knob to highlight 'Load Approach', then press the **ENT** key. A window appears listing the available approaches for the destination airport.

3. Turn the **FMS** knob to select the desired approach, then press the **ENT** key. A window appears listing the available transitions for the approach.

> ✓ *NOTE: The 'Vectors' option assumes that the pilot will receive vectors from ATC to the final course segment of the approach.*

4. Turn the **FMS** knob to select the desired transition or vectors, then press the **ENT** key. With 'LOAD?' highlighted, press the **ENT** key to load the approach.

5. To activate the approach, turn the **large FMS** knob to highlight 'ACTIVATE?', then press the **ENT** key.

> ✓ *NOTE: 'LOAD' adds the approach to the flight plan without immediately using the approach for navigation guidance. This allows the pilot to continue navigating the original flight plan until cleared for the approach, but keeps the approach available for quick activation when needed. 'ACTIVATE' adds the approach to the flight plan and begins navigating the approach course.*

Remove Departure

Remove Departure deletes the current standard instrument departure (SID) from the active flight plan.

Remove Arrival

Remove Arrival deletes the current standard terminal arrival route (STAR) from the active flight plan.

Remove Approach

Remove Approach deletes the currently selected approach from the active flight plan.

To remove a departure, an arrival, or an approach from a direct-to or active flight plan:

1. From the Flight Plan window, press the **MENU** key to display the page menu options.

2. Turn the **FMS** knob to highlight 'Remove Departure', 'Remove Arrival', or 'Remove Approach', then press the **ENT** key. A confirmation window appears listing the procedure that is about to be removed, with 'OK' highlighted. Press the **ENT** key to remove the procedure.

3. To cancel, turn the **large FMS** knob to highlight 'CANCEL', then press the **ENT** key.

Closest Point of FPL

Closest Point of FPL calculates the bearing and closest distance at which a flight plan passes from a reference waypoint. It may also be used to create a new user waypoint along the flight plan at the location closest to a chosen reference waypoint.
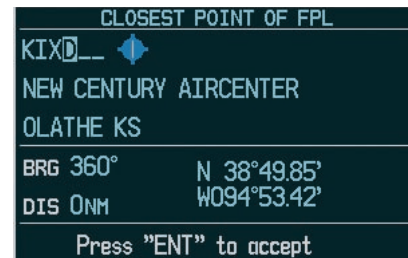

Figure 3.6.22 Closest Point of FPL Window

To determine the closest point along the active flight plan to a selected waypoint:

1. From the Flight Plan window, press the **MENU** key to display the page menu options.

2. Turn the **FMS** knob to highlight 'Closest Point of FPL', then press the **ENT** key. A window appears with the reference waypoint field highlighted.

3. Turn the **FMS** knobs to enter the identifier of the reference waypoint, then press the **ENT** key. The G1000 displays the bearing (BRG) and distance (DIS) to the closest point along the flight plan from the selected reference waypoint.

4. To create a user waypoint at this location and add it to the flight plan, press the **ENT** key. The name for the new user waypoint is derived from the identifier or the reference waypoint.

Change Fields

Change Fields allows the pilot to select the desired data items to be displayed on the Flight Plan window. The user-selectable data fields can be changed to display the following information:

- Cumulative Distance (CUM)
- Distance (DIS)
- Desired Track (DTK)
- Enroute Safe Altitude (ESA)
- Estimated Time of Arrival (ETA)
- Estimated Time Enroute (ETE)

Figure 3.6.23 Change Fields on Flight Plan

To change a data field on the Flight Plan window:

1. From the Flight Plan window, press the **MENU** key to display the page menu options.

2. Turn the **FMS** knob to highlight 'Change Fields', then press the **ENT** key. The cursor flashes on one of the data fields.

3. Turn the **large FMS** knob to highlight the desired field to be changed.

4. Turn the **small FMS** knob to display a window with optional data items.

5. Turn the **FMS** knob to select the desired data item, then press the **ENT** key. Press the **small FMS** knob to remove the cursor.

Restore Defaults

Restore Defaults restores all data fields to the factory default settings.

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

1. From the Flight Plan window, press the **MENU** key to display the page menu options.

2. Turn the **FMS** knob to highlight 'Restore Defaults', then press the **ENT** key.

Procedures Window

The Procedures window is enabled and disabled by pressing the **PROC** key. The following options are available from the Procedures window:

- Activate Vector-To-Final
- Activate Approach
- Select Approach
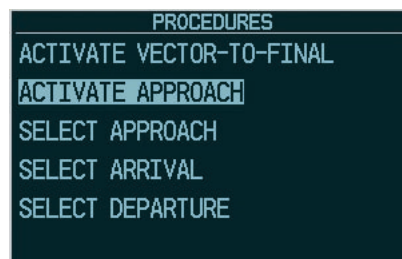- Select Arrival
- Select Departure

Figure 3.6.24 Procedures Window

Select Approach

Select Approach allows the pilot to choose a published instrument approach for the destination airport, or replace the current approach with a new selection.

> *NOTE: The pilot may also select an approach, an arrival and a departure by pressing the **MENU** key.*

To select an approach for a direct-to or flight plan destination airport:

1. From an active flight plan, press the **PROC** key to display the Procedures options window.

2. Turn the **large FMS** knob to highlight 'Select Approach', then press the **ENT** key. A window appears listing the available approaches for the destination airport.

3. Turn the **FMS** knob to select the desired approach, then press the **ENT** key. A window appears listing the available transitions for the approach.

> *NOTE: The 'Vectors' option assumes that the pilot will receive vectors from ATC to the final course segment of the approach.*

4. Turn the **FMS** knob to select the desired transition or vectors, then press the **ENT** key. With 'LOAD?' highlighted, press the **ENT** key to load the approach.

5. To activate the approach, turn the **large FMS** knob to highlight 'ACTIVATE?', then press the **ENT** key.

> *NOTE: 'LOAD' adds the approach to the flight plan without immediately using the approach for navigation guidance. This allows the pilot to continue navigating the original flight plan until cleared for the approach, but keeps the approach available for quick activation when needed. 'ACTIVATE' adds the approach to the flight plan and begins navigating the approach course.*
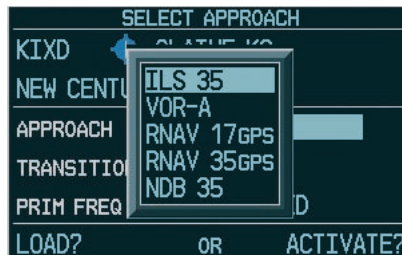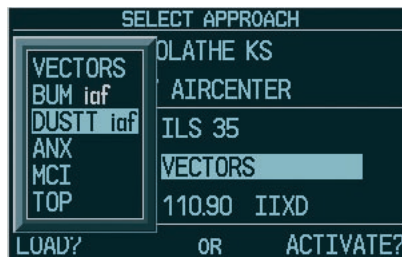

Figure 3.6.25 Approach

Figure 3.6.26 Approach Transition

Figure 3.6.27 Select Approach Window

Select Arrival

Select Arrival allows the pilot to choose a published standard terminal arrival route (STAR) for the destination airport, or replace a current arrival with a new selection.

> ✓ *NOTE: The pilot may also select an approach, arrival and departure by pressing the MENU key.*

To select an arrival for a direct-to or flight plan destination airport:

1. From an active flight plan, press the **PROC** key to display the Procedures options window.

2. Turn the **large FMS** knob to highlight 'Select Arrival', then press the **ENT** key. A window appears listing the available arrivals for the destination airport.

3. Turn the **FMS** knob to select the desired arrival, then press the **ENT** key. A window appears listing the available transitions for the arrival.

4. Turn the **FMS** knob to select the desired transition, then press the **ENT** key.

> ✓ *NOTE: This runway window is not displayed for every arrival. 'ALL' may appear in the runway field, indicating that the arrival procedure applies to all runways. For airports with parallel runways, 'B' may appear at the end of the runway designation to indicate that the arrival procedure applies to both runways.*

5. A window may appear listing runways for the arrival. Turn the **FMS** knob to select the desired runway, then press the **ENT** key. With 'LOAD?' highlighted, press the **ENT** key.

> ✓ *NOTE: When adding an arrival to an active flight plan, the pilot may need to remove a duplicate destination waypoint from the flight plan list.*
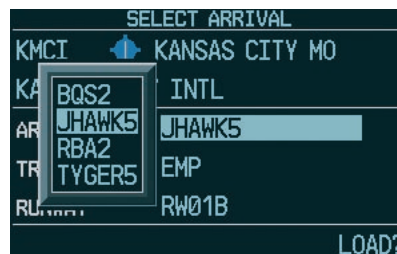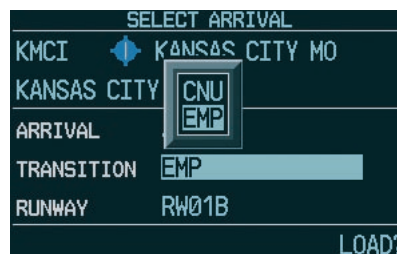

Figure 3.6.28 Arrival
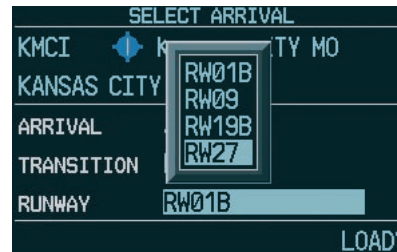

Figure 3.6.29 Arrival Transition

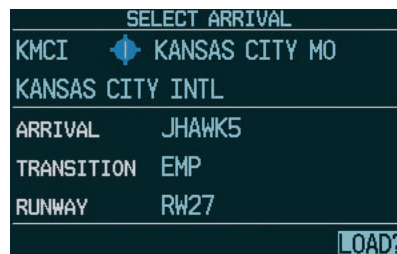**Figure 3.6.30 Arrival Runway**

Figure 3.6.31 Select Arrival Window

Select Departure

Select Departure allows the pilot to choose a published standard instrument departure (SID) for the departure airport, or replace the current departure with a new selection. When using a direct-to, the G1000 uses the nearest airport as a reference when displaying available departures.

> NOTE: The pilot may also select an approach, an arrival and a departure by pressing the **MENU** key.

To select a departure for the departure airport:

1. From an active flight plan, press the **PROC** key to display the Procedures options window.

2. Turn the **large FMS** knob to highlight 'Select Departure', then press the **ENT** key. A window appears listing the available departures for the departure airport.

3. Turn the **FMS** knob to select the desired departure, then press the **ENT** key.

> NOTE: This runway window is not displayed for every departure. 'ALL' may appear in the runway field, indicating that the departure procedure applies to all runways. For airports with parallel runways, 'B' may appear at the end of the runway designation to indicate that the departure procedure applies to both runways.

4. A window may appear listing runways for the departure. Turn the **FMS** knob to select the desired runway, then press the **ENT** key. The transition window is now displayed.

5. Turn the **FMS** knob to select the desired transition, then press the **ENT** key. With 'LOAD?' highlighted, press the **ENT** key.

Activate Approach

Activate Approach allows the pilot to activate the approach when ready to begin navigating the approach course (cleared for the approach).

To activate the approach for a direct-to or flight plan destination airport:

1. From an active flight plan, press the **PROC** key to display the Procedures options window.

2. Turn the **large FMS** knob to highlight 'Activate Approach', then press the **ENT** key.

Activate Vector-To-Final

Activate Vector-To-Final allows the pilot to activate the final course segment of the approach. This option assumes that the pilot will receive vectors to the final approach fix (FAF) and provides guidance to intercept the final course, before reaching the FAF.

To activate the approach with vectors to final:

1. From an active flight plan, press the **PROC** key to display the Procedures options window.

2. Turn the **FMS** knob to highlight 'Activate Vector-To-Final', then press the **ENT** key.

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3.7 REVERSIONARY MODE

The PFD is designed to enter reversionary (backup) mode based on automatic fault monitoring and detection, internal switching. Reversionary mode can also be activated by manually pressing a dedicated **DISPLAY BACKUP** button at the bottom of the Audio Panel (refer to Audio Panel Pilot's Guide). In reversionary mode, the CDUs are re-configured to present the PFD symbology together with the engine parameters (engine parameters are incorporated on the left side of the display).

Transition for the pilot is straightforward since PFD parameters are presented in the same format as that prior to the re-configuration. In the event of a display failure, the pilot loses one NAV, one COM and GPS as displayed below:

- PFD failure – NAV1, COM1 and GPS1 are lost
- MFD failure – NAV2, COM2 and GPS2 are lost

Figure 3.7.1 PFD Reversionary Mode

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3.8 ALERTS AND ANNUNCIATIONS

ALERTS WINDOW

Alerts appear in the Alerts window in the lower right corner of the PFD. The term "Alerts" is an encompassing term in that it includes advisories, cautions and warnings. This window allows system alerts to be displayed simultaneously. The Alerts window is enabled and disabled by pressing the **ALERTS** softkey.
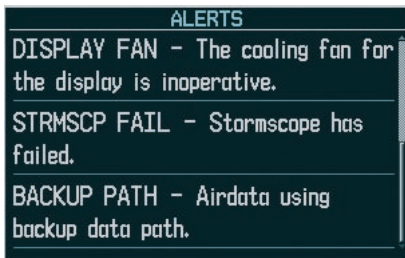

Figure 3.8.1 Alerts Window

A flashing "WARNING" softkey annunciation and an aural tone (single chime every two seconds) are used to alert the pilot of any warnings. The aural tone and flashing "WARNING" annunciator continue until acknowledged by the pilot. Pressing the **WARNING** softkey silences the aural tone and stops the annunciator from flashing.

A flashing "CAUTION" softkey annunciation and a single aural tone (one chime) are used to alert the pilot of any cautions. The flashing "CAUTION" annunciator continues to flash until acknowledged by the pilot. Pressing the **CAUTION** softkey stops the annunciator from flashing.

A flashing "ADVISORY" softkey annunciation (no aural tone) is used to alert the pilot of any message advisories. The flashing "ADVISORY" annunciator continues to flash until acknowledged by the pilot. Pressing the **ADVISORY** softkey stops the annunciator from flashing.

ANNUNCIATION WINDOW

The Annunciation window appears to the right of the Vertical Speed Indicator when a **WARNING** or **CAUTION** alert is issued. Warning alerts are displayed in red and caution alerts are displayed in yellow.

> **NOTE:** When new alerts appear, they are displayed with a separate white line at the top of the annunciation window, regardless of priority. Once they are acknowledged, they are sequenced based on priority.

> **NOTE:** For a detailed description of all annunciations and alerts, please refer to the Annunciations and Alerts Pilot's Guide.

Figure 3.8.2 Annunciation Window

GARMIN

Garmin International, Inc.
1200 East 151st Street
Olathe, KS 66062, U.S.A.
p: 913.397.8200 f: 913.397.8282

Garmin AT, Inc.
2345 Turner Road SE
Salem, OR 97302, U.S.A.
p: 503.391.3411 f: 503.364.2138

Garmin (Europe) Ltd.
Unit 5, The Quadrangle
Abbey Park Industrial Estate
Romsey, SO51 9DL, U.K.
p: 44/1794.519944 f: 44/1794.519222

Garmin Corporation
No. 68, Jangshu 2nd Road
Shijr, Taipei County, Taiwan
p: 886/2.2642.9199 f: 886/2.2642.9099

www.garmin.com