

Section 4

Button/Menu Functions

Overview

Pressing any of the peripheral buttons activates the function indicated by the button label. These are button functions.



In this example, pressing the MENU button displays the menus on the screen.

If the menu tiles are shown, pressing the button adjacent to the menu tile activates that menu. These are menu functions.



In this example, pressing the NRST button (ZOOM ON menu tile) turns the PFD zoom function on.

Some menu functions generate an immediate response, in which case the menu tiles disappear. Other menus display further “submenus” (indicated by a dot-dot after the menu name, example: **BUGS . .**).

When the menu appears in the lower-right corner of the screen, it is controlled by the right-hand control knob.



Turning the control knob steps through the scrolling menu (or alphanumeric characters) and the current selection is highlighted (as **WAYPOINT JNU2** is above). When the desired selection is highlighted, pushing the control knob enters the selection, which may activate a function or display yet another menu. When making alphanumeric entries, push the knob to advance to the next character.

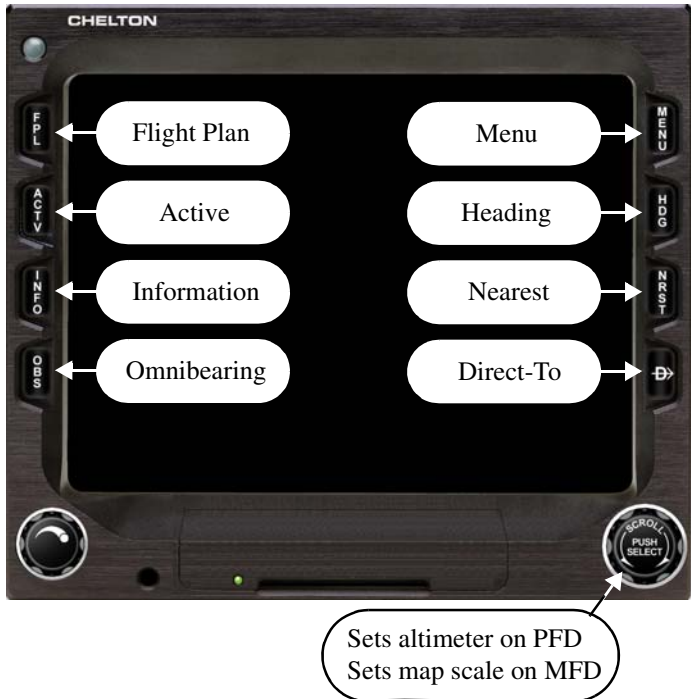


When within the menu structure, **EXIT** will always appear in the upper right corner and **BACK** will appear in the upper left corner when appropriate, indicating that a single step back to the prior menu position is possible. Use **EXIT** to get completely out of the menu structure from any level. Use **BACK** to step back one level to correct a mistake or make a different selection.

Many menu functions are the same on both the PFD and the ND, however there are some differences. In the following pages, the various menu functions are diagramed.

Button Functions

PFD and ND



FPL button: displays the flight plan menu.

ACTV button: displays the active flight plan menu.

INFO button: displays the information menu.

OBS button: displays the omnibearing selector menu.

MENU button: displays the first menu level associated with the current display screen. The first menu level automatically times out after 10 seconds if there are no subsequent user actions.

HDG button: displays the heading bug set menu.

NRST button: displays the nearest menu.

Direct-To button: displays the direct-to menu option.

Right-hand control knob: Function depends upon screen. On the PFD screen, rotating the control knob changes the altimeter setting. On all MFD screens other than the HSI (i.e., moving map, Strike or Traffic), rotating the control knob changes the display scale (clockwise = increase scale, counterclockwise = decrease scale). Pressing the control knob toggles between the PFD and ND screens on MFDs (i.e., not the pilot's PFD).

A **MISSED** tile will appear adjacent to the top left button upon transitioning the Final Approach Fix. When the **MISSED** tile is pressed, the missed approach procedure will be armed (if pressed prior to missed approach point) or activated (if pressed after missed approach point).

A **CONTINUE** tile will appear adjacent to the top left button when in a holding pattern with further active flight plan legs after the holding pattern. When the **CONTINUE** tile is pressed, automatic waypoint sequencing will be re-enabled to allow normal sequencing to the leg after the holding pattern.

PFD Top Level Menus

PFD Only

(Shown by pressing the **MENU** button when on the PFD screen)



DESIG: creates a user waypoint at the current aircraft location. User waypoint will automatically be named “OF###” where ### is the next available overfly user waypoint number.

TIMER: displays the timer menu.

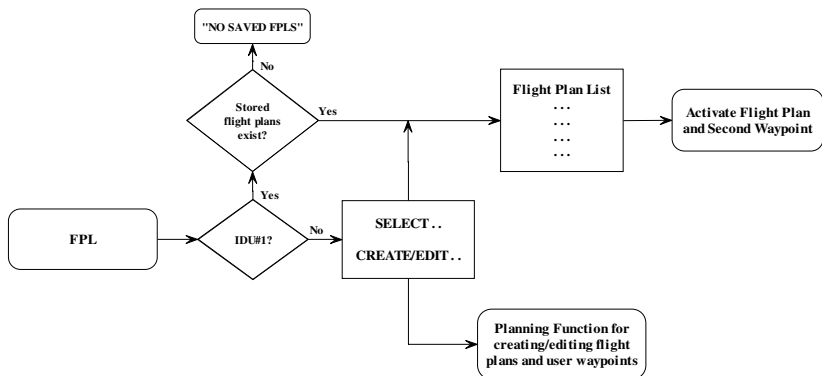
BUGS: displays the PFD bug set menu.

ZOOM ON / ZOOM OFF: toggles between wide and narrow field of view modes. **ZOOM ON** appears when the current mode is wide. **ZOOM OFF** appears when the current mode is narrow.

DCLTR: displays the PFD declutter menu.

Flight Plan Function

PFD and ND



PFD:

Upon activation of the flight plan function, the system will check for the existence of saved flight plans. If there are no saved flight plans, a **NO SAVED FPLS** menu will be displayed. Otherwise, a scrolling menu of saved flight plans will be presented.

MFD:

Upon activation of the flight plan function, the system will check for the existence of saved flight plans. If there are no saved flight plans, then the flight planning function will be activated. Otherwise, a menu will be presented allowing the user to either select a saved flight plan or enter the flight planning function. Selecting the saved flight plan menu option will lead to a list of saved flight plans.

Upon selection of a saved flight plan, the second waypoint in the flight plan will be activated (it assumes you are departing from the first waypoint in the flight plan). For example, when activating a flight plan from Teterboro to Manasas to Charlotte, Manasas will be automatically set as the waypoint plan. If a flight plan is activated enroute, the most logical waypoint is automatically set as the active waypoint.

waypoint type and what type of procedure (if any) the waypoint is associated with, and information related to the flight plan path between each waypoint. The current active waypoint will be designated by an asterisk. Any suppressed waypoint will be designated by brackets.

A suppressed waypoint is an airport associated with an approach procedure. After an approach procedure is activated, the associated airport is no longer part of the active flight plan for guidance purposes. However, the associated airport is still shown in the waypoint list so that it can be highlighted for information or to activate other procedures at the airport.

It is possible to scroll through each waypoint of the active flight plan and it is also possible to scroll one position past the end of the active flight plan for the purpose of adding a waypoint to the end of the active flight plan.

Upon selection of a waypoint from the selection list, the system will check to see whether the selected waypoint is an airport or user waypoint with an approach bearing. If not, the system will make the selected waypoint active. Otherwise, an option list will be presented as follows:

WPT: makes the selected waypoint the active waypoint.

VFR APPR: If the selected waypoint is a user waypoint with an approach bearing, then a VFR approach to the user waypoint based upon the approach bearing will be created and the user waypoint will be suppressed. If the selected waypoint is an airport, then the user will be presented with a selection list of runways. After selecting a runway, a VFR approach to the runway will be created and the airport will be suppressed. Activating a VFR approach will automatically delete any pre-existing IFR or VFR approach.

IFR APPR: If the selected waypoint is an airport with an IFR approach, then this option will be available. Upon selecting this option, a list of available approaches will be presented (if there are more than one), followed by a list of available transitions (if there are more than one), and a list of runways. After selecting a runway, the appropriate IFR approach to the runway will be created and the airport will be suppressed. Activating an IFR

approach will automatically delete any pre-existing IFR or VFR approach. If there is a pre-existing STAR to the airport, then the IFR approach waypoints will be inserted after the STAR waypoints.

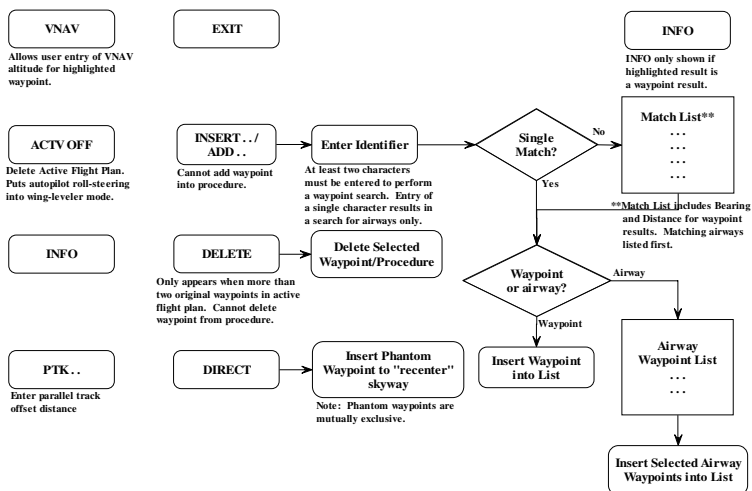
STAR: If the selected waypoint is an airport with a STAR, then this option will be available. Upon selecting this option, a list of available STARs will be presented (if there are more than one), followed by a list of available transitions (if there are more than one), and a list of runways. After selecting a runway, the appropriate STAR to the runway will be created. Activating a STAR approach will automatically delete any pre-existing STAR. If there is a pre-existing approach (IFR or VFR) to the airport, then the STAR waypoints will be inserted prior to the approach waypoints.

DP: If the selected waypoint is the first waypoint of the active flight plan and is an airport with a DP, then this option will be available. Upon selecting this option, the user will be presented with a selection list of DPs (if there are more than one), followed by a selection list of available transitions (if there are more than one), and a selection list of runways. After selecting a runway, the appropriate DP from the runway will be created. Activating a DP will automatically delete any pre-existing DPs.

ACTV (Active) Options

PFD and ND

(Shown by pressing the **ACTV** button. Only shown when a waypoint or flight plan has been selected.)



Various options appear at the same menu level as the waypoint list. These options allow various modifications to be made to the active flight plan as follows:

VNAV: There are various sources for VNAV altitudes, the navigation database and manual input through the ACTV menu. VNAV altitudes for waypoints without a navigation database or manually input VNAV altitude are automatically computed by the system using “look-ahead” rules. When “look-ahead” finds a further VNAV altitude constraint above the previous VNAV altitude constraint (i.e., climb commanded), then an automatic VNAV will be continuously calculated for the waypoint based upon an immediate climb to the altitude constraint at the higher of actual climb angle or the climb angle setting (“dynamic climb angle”). When “look-ahead” finds a further VNAV altitude constraint below the previous VNAV altitude constraint (i.e., descent commanded), then an automatic VNAV altitude

will be calculated for the waypoint based upon a descent to reach the VNAV altitude constraint at the associated waypoint using the descent angle setting. If no further VNAV altitude constraints are found, then the automatic VNAV altitude will be set to the last valid VNAV altitude constraint.

ACTV OFF: deletes the active flight plan. The user will be prompted to confirm deletion prior to completion of the operation.

INFO: activates the information menu option for the highlighted waypoint.

PTK: specifies a parallel offset distance for non-procedure segments of the active flight plan. The range of parallel offsets is from 20NM left of course to 20NM right of course in 1NM increments.

INSERT /ADD: used to insert or add a waypoint or airway into the active flight plan. If the highlighted position is one position past the end of the active flight plan, the tile will read **ADD**, otherwise the tile reads **INSERT**. When the highlighted waypoint is the second or subsequent waypoint of a procedure, the tile will not appear. The tile will also not appear when the highlighted waypoint is suppressed. When activated, the user is prompted to enter an identifier. Performing a search for waypoints requires the entry of at least two characters. If only one character is entered, only airways will be searched.

For waypoints, if there is a single result from the search, that waypoint will be inserted or added to the active flight plan. If there is no result from the search, the user will be re-prompted to enter an identifier. If there are multiple results from the search, a selection list with matching identifiers is presented and, upon selection, the selected waypoint will be inserted or added to the active flight plan. An **INFO** tile giving access to the information function for the highlighted waypoint will appear at this level to aid in selection.

For airways, a search is performed for all airways that go through the **previous** waypoint and match the entered identifier (when entering **J54**, for example). To get a list of all Victor airways that go through the previous waypoint, enter a **V**; for Jet

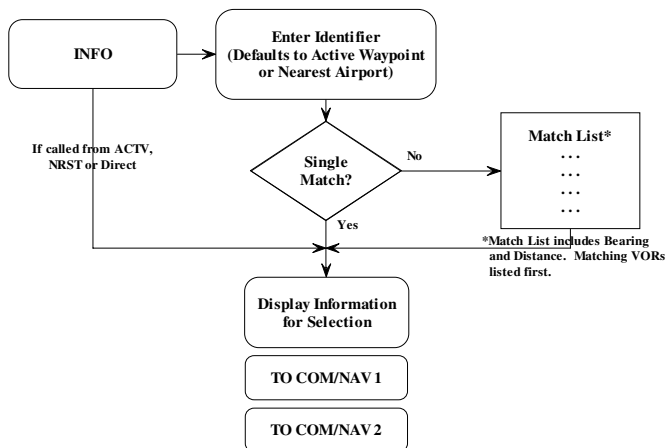
routes, enter a **J**. If there is no result from the search, the user will be re-prompted to enter an identifier. If there are multiple results from the search, a selection list with matching airway identifiers will be presented and, upon selection, a list of airway waypoints will be shown so that the user can select the desired exit or transition point. Upon selecting the desired exit point, the necessary airway waypoints from the previous waypoint to the desired exit point are inserted or added to the active flight plan. Necessary airway waypoints are the **airway entry waypoint, the airway exit waypoint, turn waypoints, and VORs**.

DELETE: If the highlighted waypoint is a non-procedure waypoint, then the function will delete the highlighted waypoint from the active flight plan. If the highlighted waypoint is part of a procedure, then the function will delete the entire procedure from the active flight plan. The user will be prompted to confirm deletion prior to completion of the operation. This tile will not appear if the highlighted waypoint is a non-procedure waypoint and there are fewer than three non-procedure waypoints in the active flight plan. This is because an active flight plan must always have at least two non-procedure waypoints. The tile also will not appear when the highlighted waypoint is suppressed or when the highlighted position is one position past the end of the active flight plan.

Direct-To: will insert a phantom waypoint at the current aircraft location and re-center the aircraft on a direct route to the waypoint active. This tile will not appear when the highlighted waypoint is suppressed, when the highlighted position is one position past the end of the active flight plan, or when the highlighted waypoint is the second or subsequent waypoint of a procedure.

INFO Function

PFD and ND



If the **INFO** tile is activated from within the **ACTV**, **NRST** or **Direct-To** menus, then information on the highlighted waypoint from the applicable selection list will be shown directly. Otherwise, the system will check for a current active waypoint. If there is an active waypoint, then it will be the default entry. If there is no active waypoint, then the nearest airport will be the default entry. If the default entry is accepted by the user, then its information will be shown. If the user rejects the default entry by entering identifier characters, then a search for matching identifiers will be performed. If there is a single result from the search, information for that result will be shown. If there is no result from the search, the user will be re-prompted to enter an identifier. If there are multiple results from the search, a selection list with matching identifiers will be presented to allow the user to select the desired identifier.

The amount and type of information presented depends upon the type of waypoint. For all types of waypoints, waypoint identifier, waypoint type, long name, bearing and distance, and latitude/longitude are presented. For navigation aids, navigation aid frequency will also be presented. For airports,

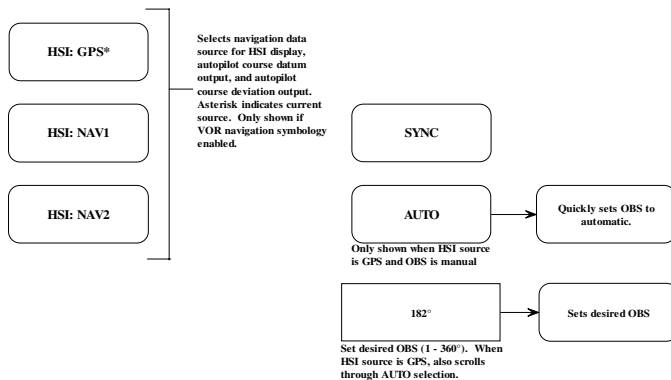
communication frequencies and airport runway data will also be presented.

If remote tuning of navs and coms is enabled and a single frequency is associated with the waypoint, tiles are shown to allow sending of the frequency to remote NAV or COM radios. If more than one frequency is associated with the waypoint (airport waypoint, for example), tiles are shown to allow sending of a frequency to remote NAV or COM radios when a frequency is highlighted in the INFO block. If the frequency is less than 118MHz, the tiles will read **TO NAV1** and **TO NAV2**. If the frequency is greater than or equal to 118MHz, the tiles will read **TO COM1** and **TO COM2**.

The information window is closed by pushing the control knob.

OBS (Omnibearing Selector) Function

PFD and ND

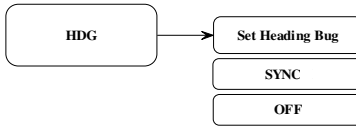


The **OBS** function allows the user to control the setting of the omnibearing selector for purposes of showing course deviations. The OBS for GPS/WAAS allows the user to specify either a manual OBS setting, or an automatic OBS setting in which the current active OBS is controlled by the active flight plan. The OBS for VOR allows the user to specify the active OBS setting for the VHF navigation function. Manual GPS/WAAS OBS setting and VOR OBS setting are settable in increments of 1°.

With optional VHF navigation, the OBS function also permits the user to select either GPS, NAV1, or NAV2 as the HSI source. The HSI source selects which navigation source is used to generate HSI guidance symbology. HSI source also selects which navigation source is used for autopilot course datum and course deviation signals. When HSI source is set to NAV1 or NAV2 and flight director symbology is not enabled, HSI symbology is automatically enabled on the PFD. A synchronization function synchronizes the Manual GPS/WAAS OBS setting or VOR OBS setting (depending upon HSI source) to aircraft heading.

HDG (Heading) Function

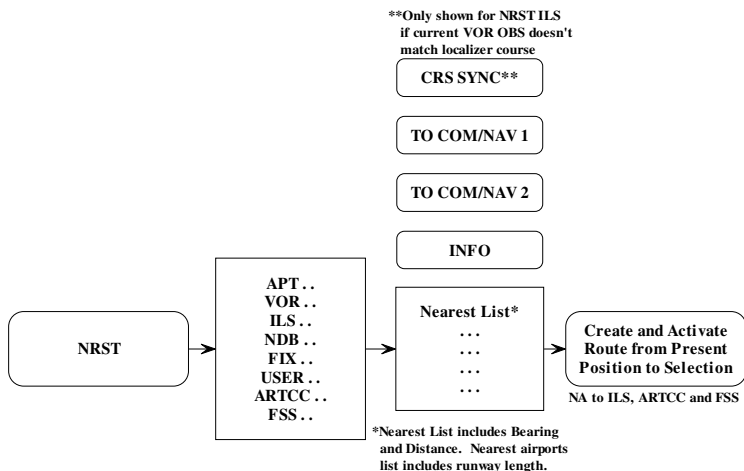
PFD and ND



The heading bug function allows the user to set the heading bug in increments of 1°, synchronize the heading bug to current heading, or turn the heading bug off.

NRST (Nearest) Function

PFD and ND



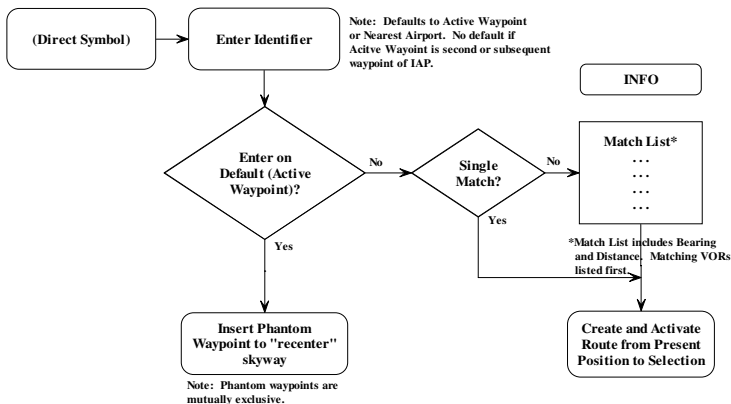
Upon pressing the **NRST** button, an option list appears to allow the user to select from a list of the nearest airports, nearest VORs, nearest ILSs, nearest NDBs, nearest fixes, nearest user waypoints (if any have been created), nearest ARTCCs, or nearest FSSs. Upon selecting a waypoint category from the option list, a selection list of waypoints matching the waypoint category will appear. The selection list includes identifier, bearing and distance to the waypoint. The selection list for airports also contains an indication of the longest runway length at the airport. The selection list for airports, VORs, ILSs, NDBs, ARTCCs and FSSs includes an associated frequency (CTAF in the case of airports). If remote tuning is enabled, tiles are shown to allow transmission of the associated frequency to remote NAV or COM radios.

An **INFO** tile activates the information function and provides further information on the highlighted waypoint. Upon selecting an airport, VOR, NDB, fix or user waypoint, a new active flight plan is created from present aircraft position to the selected waypoint.

A **CRS SYNC** tile synchronizes the OBS to the ILS course.

Direct-To Function

PFD and ND



Upon pressing the **Direct-To** button, the system will check for a current active waypoint. If there is an active waypoint and the waypoint is not the second or subsequent waypoint of an IFR approach procedure, then the active waypoint will be the default entry. If there is no active waypoint, then the nearest airport will be the default entry.

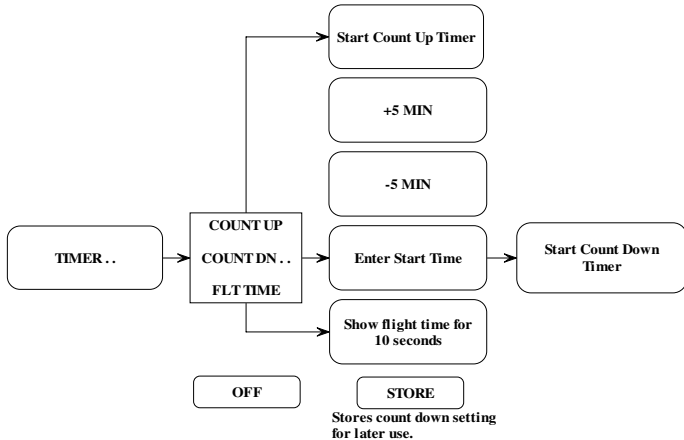
If the default entry is the active waypoint and is accepted by the user, then a phantom waypoint will be inserted at the current aircraft location and the skyway will be “re-centered” to provide guidance directly to the new active waypoint. The rest of the active flight plan will remain unchanged. If the default entry is not the active waypoint and is accepted by the user, then a new active flight plan will be created from present aircraft position to the selected waypoint.

If the user rejects the default entry by entering identifier characters, then a search for matching identifiers will be performed. If there is a single result from the search, then a new active flight plan is created from present aircraft position to the result. If there is no result from the search, the user will be re-prompted to enter an identifier. If there are multiple results from the search, a list with matching identifiers will be

presented and, upon selection, a new active flight plan will be created from present aircraft position to the selected waypoint. An **INFO** tile giving access to the information function for the highlighted result will appear at this level to aid in selection.

Timer Function

PFD and ND

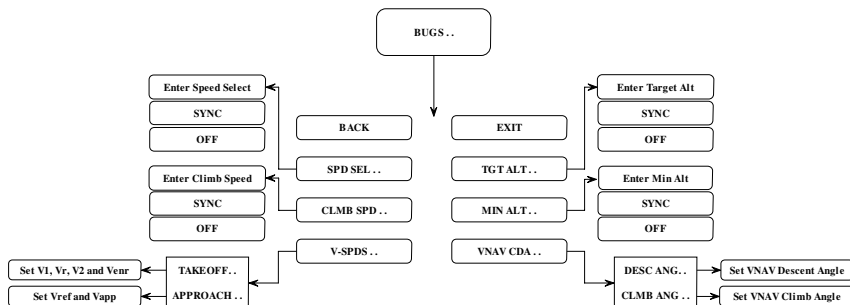


Upon selecting the timer function, a menu will appear to let the user choose the count up timer, the count down timer, or the flight time display. An **OFF** tile will also appear at this level to allow the user to turn off any active timer functions. If the user selects the count up timer, the count up timer will be activated immediately.

If the user selects the count down timer, the user will be prompted to enter a start time from which the count down begins. Shortcut tiles to quickly add or decrease by 5 minute increments are provided. After entering a start time, the user will be able to either start the count down timer or select the **STORE** tile to store the start time for later use. If the user selects the flight time display option, the current elapsed time since system power up will be displayed for 10 seconds or until any key is pressed.

Bug Set Function

PFD Only



Upon selecting the PFD bugs function, the user is presented with an option list to choose either setting a target altitude, setting a minimum altitude, setting an airspeed bug, setting the VNAV climb or descent angle, or setting V-speeds. Selecting the target altitude option allows the user to either synchronize the target altitude to current altitude, turn the target altitude off or set the target altitude in increments of 100 feet (enroute and terminal mode) or 10 feet (approach mode).

Selecting the minimum altitude option allows the user to either synchronize the target altitude to current altitude, turn the minimum altitude off, or set the minimum altitude in increments of 10 feet.

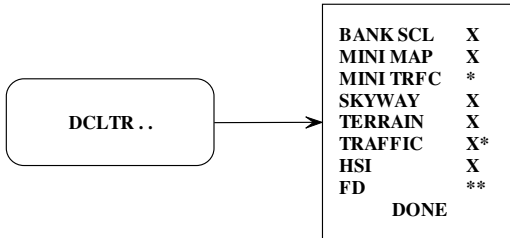
Selecting the airspeed bug option allows the user to either synchronize the airspeed bug to current airspeed, turn the airspeed bug off, or set the airspeed bug in increments of 1 knot indicated airspeed.

Selecting the VNAV climb or descent angle option brings up a further option list for setting either climb angle or descent angle. Selecting either option allows the user to set the climb angle or angle in increments of 0.1°. Corresponding feet per nautical mile is shown adjacent to the climb or descent angle setting.

Selecting the V-speed option allows the user to set takeoff V-speeds (V_1 , V_R , V_2 and V_{ENR}) or approach V-speeds (V_{REF} and V_{APP}).

PFD Declutter (DCLTR) Function

PFD Only



* Only shown with optional traffic sensor installed.

** Only shown with optional FD enabled. Note: HSI and FD are mutually exclusive.

Upon activating the PFD declutter function, a list of declutter items will be shown. It is possible to select or deselect the following items:

1. Bank angle scale (toggle between full-time display and auto declutter at small bank angles).
2. PFD mini-map.
3. Skyway guidance symbology.
4. Perspective terrain and obstacle depiction.
5. Perspective traffic depiction.
6. HSI symbology.
7. Flight director symbology (only shown with optional flight director symbology option and mutually exclusive with HSI symbology).

Navigation Display Top Level Menus

ND Only

(Shown by pressing the **MENU** button when on the MFD screen)



FAULTS: displays the fault display menu.

CLR STRKS: displays the strike clear option for the Goodrich WX-500. This menu option will only appear on the ND screen and Strike screen when the WX-500 option is enabled.

DESIG: Same function as PFD Top Level Menu.

TIMER: Same function as PFD Top Level Menu.

SET FUEL: displays the fuel totalizer set menu.

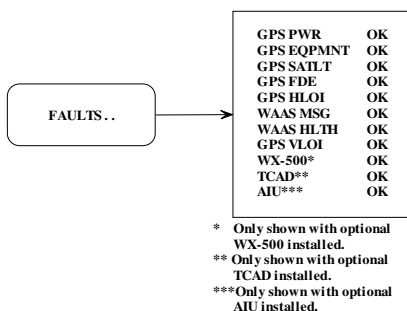
FUNCTION: displays the MFD screen display select menu.

FORMAT or **RMI ON / RMI OFF**: On screens other than the HSI screen, displays the appropriate screen format menu option. On HSI screen with optional VHF navigation, toggles showing of radio magnetic indicator. **RMI ON** appears when the current mode is radio magnetic indicator off. **RMI OFF** appears when the current mode is radio magnetic indicator on.

Faults Function

ND Only

(See System Overview, **GPS/WAAS Receiver**, page 31, for information on GPS Faults.)



Upon selecting the MFD faults menu, the status of the following system parameters will be displayed:

1. GPS/WAAS loss of navigation due to absence of power ("GPS PWR").
2. GPS/WAAS loss of navigation due to probable equipment failure ("GPS EQPMNT").
3. GPS/WAAS loss of navigation due to inadequate satellites to compute a position solution ("GPS SATLT").
4. GPS/WAAS loss of navigation due to a position failure that cannot be excluded within the time to alert ("GPS FDE").
5. GPS/WAAS loss of horizontal integrity monitoring and loss of navigation due to loss of horizontal integrity monitoring ("GPS HLOI").
6. GPS/WAAS loss of navigation due to no valid WAAS message received for 4 seconds or more.
7. GPS/WAAS loss of navigation due to insufficient number of WAAS HEALTHY satellites ("WAAS HLTH").

8. If the WX-500 option is enabled, loss of communications with the WX-500 ("WX-500").
9. If the traffic option is enabled, loss of communications with the traffic sensor ("TRFC").
10. If the analog interface option is enabled, loss of communications with the analog interface ("AIU").

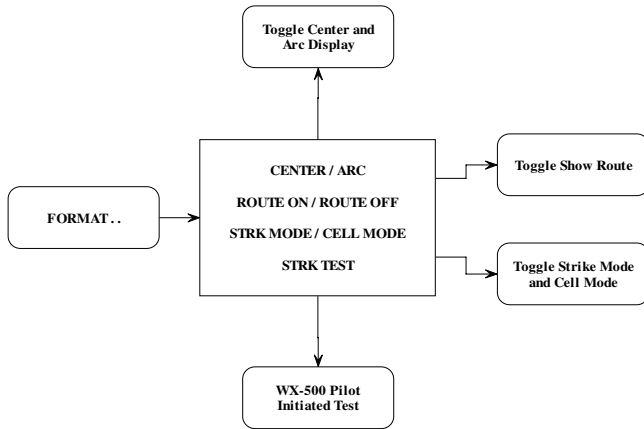
“OK” indicates the function or device is operating properly.

“X” indicates a fault.

Strike Format Function

ND Only

(Only shown with optional WX-500 installed).



Upon selecting the MFD format function when in the Strike screen, a menu appears with the following options:

CENTER / ARC: toggles between centered and arc lightning strike screen display format.

ROUTE ON / ROUTE OFF: toggles showing/not showing the active flight plan route on the lightning strike screen.

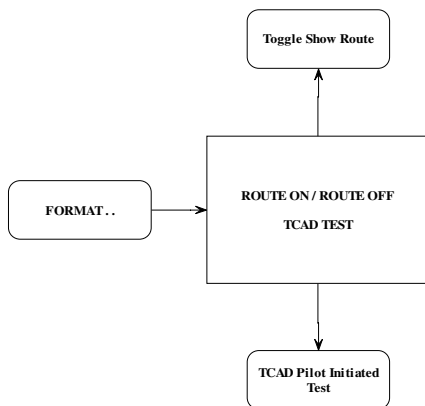
STRK MODE / CELL MODE: toggles between strike mode/strikes and cell mode on the lightning strike screen.

STRK TEST: activates the WX-500 pilot initiated test function.

Traffic Format Function

ND Only

(Only shown with optional TCAD installed.)



Upon selecting the MFD format function when in the Traffic screen, a menu will appear with the following options:

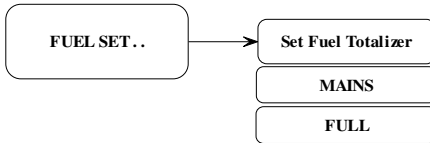
CENTER / ARC: toggles between a centered and arc traffic screen display format.

ROUTE ON / ROUTE OFF: toggles showing/not showing the active flight plan route on the traffic screen.

TCAD TEST: activates the TCAD pilot initiated test function.

Fuel Set Function

ND Only



The fuel totalizer quantity setting function allows the user to set the fuel totalizer quantity in increments of volume units (volume units depends upon the aircraft-specific configuration of the system, i.e. pounds, gallons, etc.).

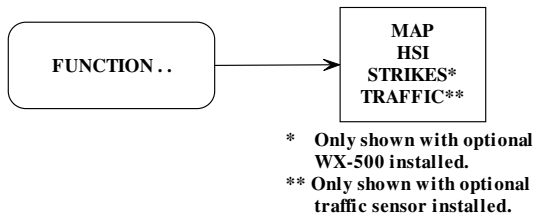
The **MAINS** menu tile sets the quantity to the “fuel tabs” or “main tanks” fuel capacity.

The **FULL** menu tile sets the quantity to the total aircraft fuel capacity (full tanks or mains plus tips, for example).

This menu also displays the total fuel flow shown in parenthesis next to the total fuel remaining.

MFD Function

ND Only



The Display function allows the user to select which MFD screen to display. Options include:

MAP: shows the moving map screen.

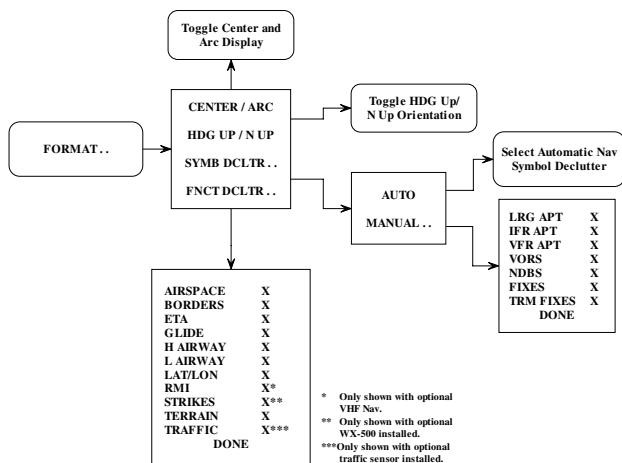
HSI: shows the HSI screen.

STRIKES: shows the lightning strike screen. This option is only available if the WX-500 option is enabled.

TRAFFIC: shows the traffic screen. This option is only available if the TCAD option is enabled.

Moving Map Format Function

ND Only



Upon selecting the MFD format function when on the moving map screen, a menu appears with the following options:

CENTER / ARC: toggles between centered and arc display format.

HDG UP / N UP: toggles between a heading up and a True North up display format.

SYMB DCLTR: activates a menu that allows the user to choose either automatic navigation symbol declutter or manual navigation symbol declutter. (If the user chooses manual navigation symbol declutter, a further menu appears to allow the user to individually toggle display of large airports (IFR and longest runway > 8100'), IFR airports, VFR airports, VOR's, NDBs, fixes, or Terminal fixes.) Turning on VFR airports also turns on large airports and IFR airports. Turning on IFR airports also turns on large airports. Turning off large airports also turns off IFR airports and VFR airports. Turning off IFR airports also turns off VFR airports.

NOTE:

The active airport destination will always be shown on the ND regardless of declutter settings.

FNCT DCLTR: activates a menu that allows the user to individually toggle display of airspace, borders, ETA, glide, high altitude airways, low altitude airways, current latitude and longitude, display of RMI needles (if VHF navigation option is enabled), display of lightning strikes (if WX-500 option is enabled), display of terrain, and display of traffic (if TCAD option is enabled).

NOTE:

Manual declutter settings will be retained upon power down.
