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12 November 2007

G1000 Software Changes

Cessna Service Bulletin SB07-34-02 Revision 1 dated 13 August 2007 created some significant and welcome changes to the G1000 system. It updates the software to Version 563.03. Some of the more significant changes are:

Vertical Navigation: Added support for assigning altitude constraints with vertical waypoints to give vertical navigation guidance.

Along Track Offset Waypoints: Waypoints may be created that are offset a specified distance along the flight plan path from an existing waypoint.

Barometric Altitude Minimum: New functionality added for setting a minimum descent altitude.

Current Track Bug: Feature added to display the airplane's current track on the HSI.

Wind Data Window: Includes an additional wind data window to provide various formats of wind magnitude, direction, crosswind and headwind components.

Transponder GND Softkey: Added a transponder GND softkey to allow manual selection of Ground Mode.

Traffic Information Service (TIS): Enhanced TIS functionality by disabling TIS on the ground to avoid nuisance alerts, and allow muting of the TIS Not Available (TIVA) alert by use of a new TNA MUTE softkey.

Temporary Flight Restrictions (TFR) Display: Enhanced highlighting of waypoints beneath some TFR's and TFR highlighting while using the map pointer.

The first five items are explained in more detail in the following pages.

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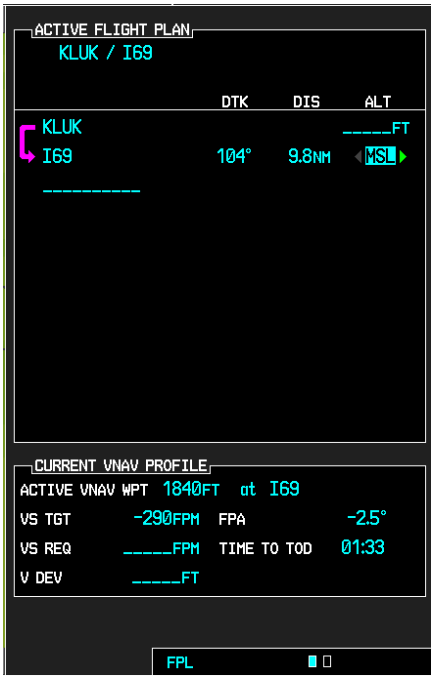
Revised Vertical Navigation

Flight Plan Page 3 is gone. It is replaced by a revised Page 1 shown at right. This shows an active flight plan from LUK to I69. The aircraft is at 4,000 MSL with an airspeed of 120 KN.

After entering the flight plan, the pilot can specify target altitudes for the various waypoints, so long as the waypoint is not the final approach fix or a waypoint after the FAF. The target altitude can be specified as MSL or AGL for airports, but musty be MSL for any other waypoint. In this example, an altitude at I69 of 1,000 ft. AGL was specified as follows:

1. Position the cursor in the ALT field for the waypoint for which the target altitude is desired.
2. Enter the target altitude using the small FMS knob and press ENTER
3. The field will display MSL. Turn the small FMS knob to change the field to AGL (airports only).
4. Press the ENTer key. If AGL is entered, the target altitude will be converted to MSL.



Caution: Vertical navigation is an aid to navigation only! It does not provide terrain or obstacle avoidance, nor does it authorize the pilot to descend below minimum enroute altitudes, Minimum Descent Altitudes, or Decision Altitudes unless the conditions specified in the FAR's are met.

Note: The target descent rate is not available to the KFC 140 autopilot. The autopilot descent rate must be adjusted manually as before.

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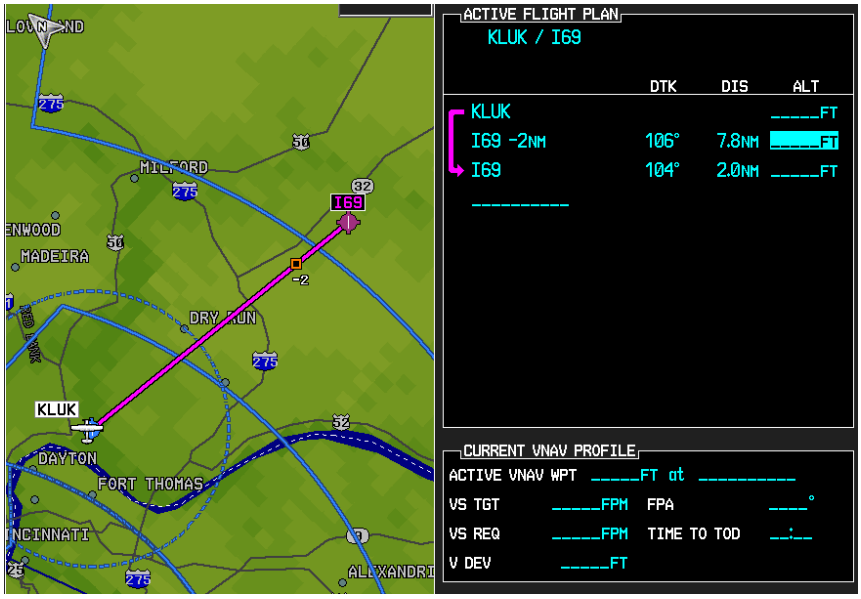
Along Track Offset Waypoint

The pilot may create waypoints that are offset along the planned flight path from existing flight plan waypoints, as long as the offset does not place the offset waypoint after the Final Approach Fix. The offsets may be from 1 to 99 nautical miles in increments of 1 nautical mile. Positive values place the offset waypoint after the existing waypoint, and negative values place the offset waypoint prior to the existing waypoint. Only negative values are allowed for the final waypoint in a flight plan.

To create an Along Track Offset waypoint:

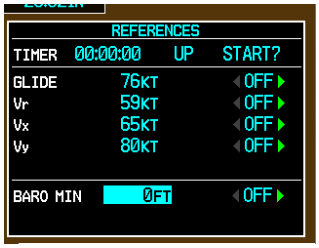
1. Go to the Active Flight Plan page (Flight Plan Group, Page 1).
2. Press the FMS button to activate the cursor and move the cursor over the waypoint from which the offset waypoint is to be created.
3. Press the ATL OFST soft key. The along track offset window will appear as shown.
4. Use the small FMS knob to enter the desired offset value. Negative numbers place the offset waypoint prior to the existing waypoint and positive numbers place it after the existing waypoint.
5. Press the ENTer key.
6. A new waypoint will appear in the flight plan and on the map at the position specified by the offset, as shown at the right.
7. A target altitude for the ATK waypoint may be specified in the same manner as any other waypoint.



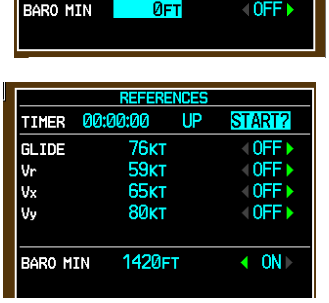
Barometric Altitude Minimum

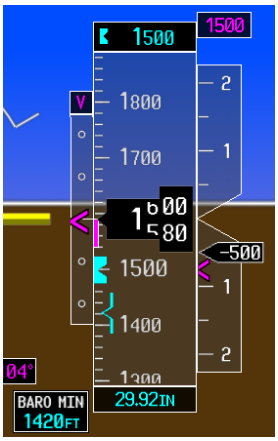
A minimum altitude bug may be set on the altimeter. The "barometric" term refers to the fact that this is the altitude calculated by the AHRS and displayed by the altimeter rather than a GPS-derived altitude. The Barometric Altitude Minimum (Baro Min) is set in the Timer/References (Time/Ref) Window of the PFD.

To set the Baro Min:



1. Press the TMR/REF softkey on the PFD to open the Time/Ref window, shown at right.
2. Press the FMS button on the PFD FMS knob to obtain a cursor.
3. Using the large FMS knob, position the cursor in the Baro Min Altitude Field as shown.
4. Use the small FMS knob to change the Baro Min Altitude. The altitude changes in increments of 10 feet, so a lot of knob twisting is usually involved.
5. Once the desired altitude is set, press ENTer to accept it. The cursor will move to the ON/OFF field.
6. Use the small FMS knob to turn Baro Min to ON. The Time/Ref window should look like the one at right when a minimum altitude is set and activated. A BARO/MIN window with the minimum altitude will appear next to the altimeter tape as shown at the lower right. An altitude bug that moves with the altimeter tape will also appear as shown when the minimum altitude is visible in the altitude tape window.





Note: The Baro Min is not available to the KFC 140 autopilot. Autopilot target altitudes must be set manually as before.

Current Track Bug

A Current Track Bug appears on the HIS in the PFD window, as shown at right, showing the current ground track of the aircraft. This is especially useful in maintaining proper ground track when flying approaches or search patterns. There are no pilot options or adjustments available for the current track bug.

Wind Data Window

An additional Wind Data Window appears to the upper right of the PFD Inset Map. As shown at right. To activate the Wind Data Window:

1. Press the PFD soft key on the PFD.
2. Press the WIND soft key (third key from the left.
3. Press the OPTN 1, OPTN 2, or OPTN 3 soft keys to choose the desired Wind Data Window style. The three styles are shown below.

Option 1: Head/Tail Wind and Cross Wind Vectors

Option 2: Traditional Wind Vector

Option 3: Traditional Wind Direction Vector with Tabular Head/Tail and Crosswind Values