

Alerts Screen

- Manually started by clicking on the "Set Alerts Button"
- Started when app is first opened
- Form Details
 - Stall Speed
 - Must be greater than 40 knots
 - Safety Margin
 - Must be greater than 10 knots
 - Landing Headwind
 - Must be greater than sum of stall speed and safety margin
 - Alert Speed
 - Stall speed + safety margin - landing headwind
 - Displayed on main screen as "Warn @ {speed}"

GPS Data

Speed

- If speed data from GPS is marked valid by the sensors, it is displayed
- If below the alert speed, it is displayed with a red color (unless the siren is playing then it is black), otherwise green

Altitude

- An absolute altitude is received from the GPS and is used with the altimeter along with a calculated offset to estimate the MSL

Altitude

- Displayed rounded to the nearest 50
- If negative, the color is blue
- Current MSL is displayed using the offset calculated when setting the current alt as "Current Est MSL @ {MSL}"

Set Current Alt

- If speed is less than 20 knots, the current alt is 0 ft
- If the speed is greater than 40 knots, the current alt is 1000 ft
- Otherwise the button is disabled
- The current alt is used to calculate an offset in order to correctly report the altitude using the altimeter, which only provides relative alt
- If the speed is under 2 knots and the change in alt is under 50 fpm for 1 minute after startup, the current alt is automatically set to 0

Change in Alt

- It is calculated with a moving average using data over the past 3 seconds, and since altimeter updates are received approximately once every second, this uses 3 data points
- If negative, the color is blue otherwise black
- Rounded to the nearest 50

Audio

- Mute Button - mutes all audio regardless of situation
- If the speed is greater than the alert speed or the pilot is on the ground, nothing is played
- If the speed is below the stall speed - landing headwind + 3, the siren is turned on
 - This consists of consists of linear adjustments of the frequency alternating between increasing and decreasing
 - The background color fades between red and clear every third of a second
- If the speed is below alert speed - safety margin / 2 (between alert speed and stall speed), a solid sound is enabled
 - The speed blinks every third of a second
- Otherwise an alternating sound is played, with a period of 1 second

Misc**On Ground**

- A change in on ground is detected when acceleration in the y direction wrt to the pilot is less than -0.5 m/s^2
- If change in alt is positive, the pilot is off the ground, otherwise they are on the ground
- If the pilot is on the ground for 18 minutes, the sleep timer on the iPad that is usually disabled is reenabled, and the iPad will go to sleep after a few minutes