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<td>AC</td>
<td>Advisory Circular</td>
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<tr>
<td>ACARS</td>
<td>Aircraft Communications Addressing and Reporting System</td>
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<td>ADIZ</td>
<td>Air Defense Identification Zone</td>
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<td>ADS-B</td>
<td>Automatic Dependent Surveillance - Broadcast</td>
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<td>ADS-C</td>
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<tr>
<td>AFM</td>
<td>Aircraft Flight Manual</td>
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<td>AFTN</td>
<td>Aeronautical Fixed Telecommunication Network</td>
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<td>AIP</td>
<td>Aeronautical Information Publication</td>
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<td>ALT</td>
<td>Altitude</td>
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<td>ALTRV</td>
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<tr>
<td>APV</td>
<td>Approach with Vertical Guidance</td>
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<td>AR</td>
<td>Authorization Required</td>
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<tr>
<td>ATC</td>
<td>Air Traffic Control</td>
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<td>ATFM</td>
<td>Air Traffic Flow Management</td>
</tr>
<tr>
<td>ATFMX</td>
<td>Air Traffic Flow Management Exempt</td>
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<tr>
<td>ATIS</td>
<td>Automatic Terminal Information Service</td>
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<td>ATN</td>
<td>Aeronautical Telecommunications Network</td>
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<td>BRNAV</td>
<td>Basic Area Navigation</td>
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<td>CFR</td>
<td>Code of Federal Regulations</td>
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<td>COM</td>
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<td>Destination</td>
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<tr>
<td>DME</td>
<td>Distance Measuring Equipment</td>
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<td>DOF</td>
<td>Date of Flight</td>
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<tr>
<td>DVFR</td>
<td>Defense Visual Flight Rules</td>
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<tr>
<td>EET</td>
<td>Estimated Elapsed Time</td>
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<tr>
<td>EFC</td>
<td>Expect Further Clearance</td>
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<tr>
<td>ELT</td>
<td>Emergency Locator Transmitter</td>
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<tr>
<td>EOBT</td>
<td>Estimated Off-Block Time</td>
</tr>
<tr>
<td>ES</td>
<td>Extended Squitter</td>
</tr>
<tr>
<td>ETD</td>
<td>Estimated Time of Departure</td>
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<tr>
<td>FAA</td>
<td>Federal Aviation Administration</td>
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<tr>
<td>FANS</td>
<td>Future Air Navigation Systems</td>
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<tr>
<td>FFR</td>
<td>FireFighting</td>
</tr>
<tr>
<td>FIC</td>
<td>Flight Information Centre (Canada)</td>
</tr>
<tr>
<td>FIR</td>
<td>Flight Information Region</td>
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<tr>
<td>FL</td>
<td>Flight Level</td>
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<tr>
<td>FLTCK</td>
<td>Flight Check</td>
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<td>Flight Management Computer</td>
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<td>Flight Management System</td>
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<td>Flight Suspension</td>
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<td>GBAS</td>
<td>Ground Based Augmentation System</td>
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<td>GLONASS</td>
<td>Global Navigation Satellite System</td>
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<tr>
<td>GLS</td>
<td>Glide Slope</td>
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<td>GNSS</td>
<td>Global Navigation Satellite System</td>
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<tr>
<td>GPH</td>
<td>Gallons Per Hour</td>
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<td>GPS</td>
<td>Global Positioning System</td>
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<tr>
<td>GSL</td>
<td>Geometric altitude relative to Sea Level</td>
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<tr>
<td>HAZMAT</td>
<td>Hazardous Material</td>
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<td>HEAD</td>
<td>Head of State</td>
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<tr>
<td>HLA</td>
<td>High Level Airspace</td>
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<tr>
<td>HFDL</td>
<td>High Frequency Data Link</td>
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<tr>
<td>HOSP</td>
<td>Hospital</td>
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<tr>
<td>HSI</td>
<td>Horizontal Situation Indicator</td>
</tr>
<tr>
<td>HUM</td>
<td>Humanitarian</td>
</tr>
<tr>
<td>ICAO</td>
<td>International Civil Aviation Organization</td>
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<tr>
<td>IFR</td>
<td>Instrument Flight Rules</td>
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<td>ILS</td>
<td>Instrument Landing System</td>
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<tr>
<td>INMARSAT</td>
<td>International Marine/Maritime Satellite</td>
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<tr>
<td>INS</td>
<td>Inertial Navigation System</td>
</tr>
<tr>
<td>IRU</td>
<td>Inertial Reference Unit</td>
</tr>
<tr>
<td>kHZ</td>
<td>Kilohertz</td>
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<tr>
<td>KM</td>
<td>Kilometers</td>
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<td>LNAV</td>
<td>Lateral Navigation</td>
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<td>LORAN</td>
<td>Long-Range Aid to Navigation</td>
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<tr>
<td>LPH</td>
<td>Liters Per Hour</td>
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<td>LPV</td>
<td>Localizer Precision with Vertical Guidance</td>
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<td>Military Separation</td>
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<tr>
<td>MEA</td>
<td>Minimum Enroute Altitude</td>
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<td>MEDEVAC</td>
<td>Medical Evacuation</td>
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<td>MFB</td>
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<td>MLS</td>
<td>Microwave Landing System</td>
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<td>MNPS</td>
<td>Minimum Navigation Performance Specifications</td>
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<td>MTSAT</td>
<td>Multi-functional Satellite Augmentation System</td>
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<td>NAV</td>
<td>Navigation</td>
</tr>
<tr>
<td>NM</td>
<td>Nautical Miles</td>
</tr>
<tr>
<td>OEI</td>
<td>One Engine Inoperative</td>
</tr>
<tr>
<td>OPR</td>
<td>Operator</td>
</tr>
<tr>
<td>ORGN</td>
<td>Originator</td>
</tr>
<tr>
<td>PBN</td>
<td>Performance Based Navigation</td>
</tr>
<tr>
<td>PDC</td>
<td>Pre-Departure Clearance</td>
</tr>
<tr>
<td>PDF</td>
<td>Portable Document Format</td>
</tr>
<tr>
<td>PER</td>
<td>Performance Category</td>
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<tr>
<td>PPH</td>
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<td>RALT</td>
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<td>Required Communication Performance</td>
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<td>Registration</td>
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<td>RIF</td>
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<td>Required Navigation Performance</td>
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<td>Radiotelephone</td>
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<td>RVR</td>
<td>Runway Visual Range</td>
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<tr>
<td>RVSM</td>
<td>Reduced Vertical Separation Minimum</td>
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<td>SAR</td>
<td>Search and Rescue</td>
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<td>SATCOM</td>
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<td>Satellite-Based Augmentation System</td>
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<td>Selective Calling (SELCAL)</td>
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<tr>
<td>SFRA</td>
<td>Special Flight Rules Area</td>
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<td>Standard Instrument Departure</td>
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<td>STAYINF</td>
<td>Stay Information</td>
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<td>Special Handling Reason</td>
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<td>Surveillance</td>
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<td>TACAN</td>
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<td>Take-off Alternate</td>
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<td>Terminal Enroute Control</td>
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<td>TSO</td>
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<td>Type</td>
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<td>UAT</td>
<td>Universal Access Transceiver</td>
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<td>Very-High Datalink Frequency</td>
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<td>Very-High Frequency</td>
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<td>Very High Frequency Omnidirectional Radio Range</td>
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<td>Wide Area Augmentation System</td>
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<tr>
<td>WPR</td>
<td>Waypoint Position Reporting</td>
</tr>
<tr>
<td>YFR</td>
<td>Initially an IFR flight that changes to use other flight rules</td>
</tr>
<tr>
<td>ZFR</td>
<td>Initially a VFR flight that changes to use other flight rules</td>
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GETTING STARTED

ForeFlight Mobile is the essential aviation mobile application that combines preflight, in-flight, and postflight tools into a single, intuitive mobile application. This guide will help you learn about and take advantage of all the capabilities available in ForeFlight Mobile.

ForeFlight should be installed on a device that can install the latest Apple operating system. For assistance with choosing an iPad, visit www.foreflight.com/support/buying-guide.

To get started, download ForeFlight Mobile from the Apple App Store. For more information, visit www.foreflight.com/support/getting-started.

About this Guide

This guide provides a detailed overview of ForeFlight Mobile. The first portion of the guide is divided into sections based on when you're likely use a feature (e.g., Getting Started and Preflight). The remaining portions of the guide provide feature descriptions and is organized according to how the views appear in the toolbar (e.g., Airports, Maps, and Plates).


NOTE: This guide presumes a basic level of iPad/iPhone proficiency. If you are new to iOS devices, we recommend visiting Apple iPad Support as well as the iPad User Guide at support.apple.com/manuals/.
PLAN COMPARISON

ForeFlight offers three plans for individual pilots and two plans for businesses. Each plan includes charts for one region with additional regions available for purchase. Runway Analysis is available as per tail (business) and per type (individual) license. Visit [www.foreflight.com/buy](http://www.foreflight.com/buy) to purchase a license. Refer to the table below to determine if a feature is included with your plan.

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<td>Jeppesen VFR Procedures</td>
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<td>Checklist</td>
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<td>Printable NavLog</td>
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<td>Performance Profiles</td>
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<td>Takeoff &amp; Landing Performance</td>
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<td>Runway Analysis (Add-on license required)</td>
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<td>Pre-Departure Clearance (PDC)</td>
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DESIGN

The Design chapter discusses how ForeFlight Mobile is organized and how to navigate the various views. The chapter also discusses how to customize the appearance of ForeFlight with the App Theme setting.

1.1 Navigation

ForeFlight Mobile is comprised of various views (also commonly referred to as pages). Each view represents a distinct aspect of ForeFlight functionality such as Airports, Maps, and Plates. Views either display full-screen or in a pop-up modal over the active view.

You can access a view by tapping its tab in the navigation toolbar or the slide-over menu (via the More tab). This functionality is described below.
1. DESIGN

1.1.1 Navigation Toolbar
The navigation toolbar is always depicted at the bottom of the screen. The order of tabs in the navigation toolbar can be customized. Toolbar order does not synchronize between devices.

1.1.2 More Menu and Navigation Toolbar
The number of tabs in the navigation toolbar dynamically adjusts between five to ten tabs based on available screen size and device orientation. The order of the More menu determines which tabs are included in the toolbar and how they are ordered.

For example, if a device displays six tabs in portrait mode, the top six items in the More menu are displayed in the navigation toolbar. The view at the top of the More menu is displayed on the left side of the navigation toolbar. Tabs are sorted from left to right according to how they appear in the More menu.

If a tab is not visible in the navigation toolbar, it is available in the More slide-over menu.

1.1.3 Customizing Tab Order
To edit tab order:

1. Tap More.
2. Tap Edit Tab Order.
3. Touch-hold the 3-stacked-line icon next to the tab you wish to move.
4. Slide the tab up or down to the desired position.
5. Tap Save.

To restore the original default tab order:

1. Tap More.
2. Tap Edit Tab Order.
3. Tap Restore to Default Order.
4. Tap Save.
1. DESIGN

1.1.4 Dynamic Tab
The tab to the left of the More is dynamic and will change as you select different items from the More menu. The dynamic tab allows the last selected item, not otherwise displayed in the navigation toolbar, to be displayed for quick access.

1.2 Timer/Stopwatch
The bottom of the More menu includes a count down timer and a count up stopwatch. Tap the arrow to change between count up or count down mode. Only one timer can run at a time. If the timer or stopwatch is active, tapping the arrow will stop the timer and change to the other style.

1.2.1 Stopwatch (Count Up Mode)
Tap the stopwatch to begin counting up from zero. Tap it again to stop the count. Tap it once more to reset the count to zero.

1.2.2 Timer (Count Down Mode)
Tap the timer to set a duration in hours, minutes, and seconds. Select whether the timer will repeat and set the number of repetitions after the initial countdown. Tap the timer to start the countdown, and tap it again to stop and clear the count.

ForeFlight provides in-app audio and visual alerts when the timer counts down to zero. If ForeFlight is in the background or closed when the timer expires, your device will display an iOS notification with the same information. Enable ForeFlight iOS notifications in the iPad or iPhone Settings app > Notifications.
1. DESIGN

1.3 App Theme

ForeFlight Mobile can be displayed in a light or dark theme. The color theme is adjusted under More > Settings > App Theme. See Settings for additional information. See Settings for additional information.
ACCOUNTS

The Accounts view displays subscription details and contact information. Select More > Accounts to view or edit the following information.

- Account login
- Subscription
- Name
- Phone number
- Email address
- Password
- Notifications
- ForeFlight Labs

![ForeFlight Mobile Accounts View](image-url)
2. ACCOUNTS

2.1 Subscriptions

When downloading ForeFlight Mobile for the first time, a 30-day free trial begins automatically. The free trial includes all Basic Plus features, excluding the items below.

**Trial Account Excluded Features**

- Data Syncing
- Flight Plan Filing
- Data Downloading
- Logbook
- Jeppesen Charts
- Weight & Balance
- Checklist
- Content Pack
- Internet Traffic

After the free trial, a paid subscription is required. You can purchase a subscription anytime and do not have to wait for the trial to expire. No credit for unused portions of a trial are issued.

ForeFlight subscriptions can be purchased at foreflight.com/buy (recommended) or in the app. To purchase additional items, such as Jeppesen charts, Dispatch, or Runway Analysis, you must use foreflight.com/buy.

2.2 Managing Devices

You must sign in to ForeFlight Mobile to manage devices (internet connection required).

To sign in to your account:

1. Tap More > Account > Sign In.
2. Enter your email address (username).
3. Tap Next.
4. Enter your password.
5. Tap Sign In.

If you forgot your password, enter the email address associated with your account and tap Forgot Password. A password reset email will be sent to the address entered.

To sign out of an account, tap More > Account > Sign Out on This Device > Sign Out.
2. ACCOUNTS

2.2.1 Removing Devices
Signed-in devices are depicted on the Accounts page. Remove a device from your account by tapping More > Account > Remove > Remove Device and entering your ForeFlight credentials. Devices removed from your account receive a Deactivated Subscription pop-up and are signed out of the account. Removed devices lose access to all synced data. Removing a device is recommended for lost or stolen devices.

You can also use www.foreflight.com/manage to change your email address, password and manage which devices are associated with your account.

2.3 Notifications
Receive new feature releases, special offers, and event push notifications by selecting More > Account > Notifications and turning on Marketing Push Notifications. This setting affects all devices signed in to your account. A change made on one device is reflected on all other devices.

2.4 ForeFlight Labs
ForeFlight Labs is a collection of beta features that need your feedback. Lab features are disabled by default. Enable features independently in More > Account > ForeFlight Labs. ForeFlight Labs features are limited by subscription plan. Only features available with your subscription are visible in ForeFlight Labs.

2.4.1 Taxi Routes
Taxi Routes is a Performance Plus, ForeFlight Labs feature that provides an interactive and contextually-aware taxi route editor.

To access Taxi Routes, tap the Taxi Route button at the bottom of the Maps FPL window or at the top of the Plates view. Alternatively, tap the bubble for any airport in your route and tap Edit Taxi Route to open the Taxi Route Editor for that airport.
2. ACCOUNTS

Your current position is the starting point when at an airport. If you create a User Waypoint at a location on the airport, the user waypoint will show as a location option in brown, such as “HANGAR-EXAMPLE.”

ForeFlight automatically creates a taxi route between the two specified points. Edit the route by tapping taxiway names, hold short and crossing locations, back taxi or runway taxi instructions, and other options.

Your taxi route is displayed on the moving map and airport diagram in Plates. Tap the route on the map to clear it or to make additional edits. To remove the Taxi Route, tap the route line and choose Clear.

Taxi Route is not supported at all airports. The Taxi Route map is not interactive and is for advisory purposes only.

2.4.2 Enhanced Weight & Balance

Enhanced Weight & Balance features are available for all accounts beginning with ForeFlight Mobile version 14.2. The improved features are enabled by selecting More > Accounts > ForeFlight Labs.

For full details, see the ForeFlight Weight & Balance Guide in Documents > ForeFlight or at www.foreflight.com/wb-guide.
Jeppesen terminal and en route charts can be viewed in ForeFlight Mobile by linking an existing electronic Jeppesen chart subscription or by purchasing Jeppesen charts alongside your ForeFlight subscription.

Jeppesen charts purchased through ForeFlight are automatically available for download on the mobile devices signed in to your account. Linked Jeppesen charts must be installed on your device from the More > Jeppesen view before they can be downloaded. Linked charts require an available seat for each device installing the charts. Up to six unique Jeppesen accounts can be linked to ForeFlight.

NOTE: Jeppesen charts can only be viewed in ForeFlight Mobile. ForeFlight Web is used exclusively to establish an integration and to manage the devices that are using the Jeppesen charts.
3. JEPPESEN

3.1 Purchasing Jeppesen Coverage


ForeFlight Business customers can add Jeppesen charts to their subscription by contacting sales@foreflight.com.

Jeppesen coverage purchased through ForeFlight includes terminal charts for the selected region and global en route charts. All terminal procedures for the selected region are included except for those that Jeppesen designates as part of a special chart coverage. Special chart coverage is generally reserved for military airfields. Contact team@foreflight.com to inquire about Jeppesen special chart coverage for the airports in your region.

When Jeppesen charts are purchased through ForeFlight, Jeppesen coverage is depicted in the More > Jeppesen view. Jeppesen charts are available for download in the More > Downloads view.

If purchasing additional Jeppesen coverage from ForeFlight, delete and reinstall the currently downloaded Jeppesen terminal procedures to view the new coverage. To delete Jeppesen terminal procedures, select More > Downloads and swipe from right to left on the Jeppesen Terminal Procedures download.
3. JEPPESEN

3.2 Linking Jeppesen Accounts

Link up to six Jeppesen accounts using ForeFlight Web or ForeFlight Mobile. Linked Jeppesen account details are visible on all devices and ForeFlight Web.

3.2.1 Linking Jeppesen with ForeFlight Mobile (Individual Accounts)

To link a Jeppesen account with ForeFlight Mobile, select More > Jeppesen > Sign In and enter your Jeppesen credentials.

The electronic coverage associated with your Jeppesen account is depicted after establishing the link. Jeppesen charts must be installed (and downloaded) on your device before you can view them. Linking a Jeppesen account with ForeFlight Mobile is available exclusively for individual ForeFlight accounts.
3. JEPPSENE

3.2.2 Linking Jeppesen with ForeFlight Web

To link a Jeppesen account with ForeFlight Web, select Account > Jeppesen and sign in with your Jeppesen credentials.

Jeppesen charts are only available on ForeFlight Mobile. ForeFlight Web is used exclusively to establish the integration and to manage the devices using the Jeppesen charts.

Business accounts linking Jeppesen must use an administrator account. Linked Jeppesen coverage is visible to all users on the ForeFlight account. ForeFlight administrators can remove Jeppesen coverage from any device on the account from the Account > Jeppesen view.

![Jeppesen Integration Page - ForeFlight Web](image-url)
3. JEPPSELEN

3.3 Multiple Jeppesen Accounts

Up to six Jeppesen accounts can be simultaneously linked to ForeFlight. However, only one Jeppesen-linked coverage can be installed on a device at a time. It’s not possible to install multiple linked coverages.

The Jeppesen charts available for download combine purchased coverage and linked coverage. For example, if South America coverage is purchased through ForeFlight, and two linked Jeppesen coverages are established (Europe and Africa), the devices can download the purchased (South America) coverage and have the option to install either Europe or Africa, but not both.

Multi-pilot ForeFlight account managers can link Jeppesen accounts using ForeFlight’s web application. All iOS devices on a multi-pilot account automatically sign in to Jeppesen when an administrator links the account. Pilots can install and download any coverage included in the linked Jeppesen account. Account managers can see which users have installed coverages under the Installed section of the Jeppesen tab on the web.

Pilots of a multi-pilot account cannot independently sign in to a Jeppesen account. Account administrators are the only accounts permitted to add or remove Jeppesen accounts. Individual pilots can install and uninstall Jeppesen coverage without administrator approval, provided seats are available.

Multiple Linked Jeppesen Accounts
3. JEPPESEN

3.3.1 Allowing Jeppesen Installs

ForeFlight multi-pilot accounts structured as an organization can enable the ability to install Jeppesen coverage on ForeFlight. Click **Allow Install** to permit users within the organization to install and download the selected coverage. If the coverage should not be installed on ForeFlight, deselect **Allow Install** and choose **Save Changes**.

3.3.2 Removing Coverage

Remove coverage from a device by clicking **Deactivate** in the Jeppesen Installed section. This will uninstall the coverage and remove the downloaded charts from the user’s device. The user will still be signed into the Jeppesen account. Deactivating Jeppesen coverage immediately frees up a seat for another pilot.

**CAUTION:** Removing Jeppesen coverage from a multi-pilot ForeFlight account deletes all associated Jeppesen chart downloads from the pilot’s device.
3. JEPPESEN

3.4 Installing Linked Charts

Install Jeppesen charts on an iPad or iPhone by tapping More > Jeppesen > Install Coverage > Install. Once coverage is installed on a device, it is immediately available for download.

Each time Jeppesen charts are installed on a device, the device uses one of the available Jeppesen seats. The number of seats available is displayed on the More > Jeppesen page.

If there are no available seats, the charts will not be available for installation. You’ll need to purchase additional seats or remove the coverage from another device.

NOTE: Only one linked Jeppesen coverage can be installed at a time. It is not possible to install multiple linked coverages.

3.5 Changing Coverage

To uninstall the current coverage and install a different one, select More > Jeppesen > Change Coverage. Removing coverage from a device immediately removes the downloaded charts and documents for that coverage.

3.6 Removing Jeppesen Charts

Installed Jeppesen coverage is listed in the Coverage section. Tap Remove to uninstall the current coverage from your device. Removing coverage from a device immediately removes the downloaded charts and documents for that coverage and frees up the seat for someone else.
3. **JEPPESEN**

3.7 **Jeppesen Settings**

Jeppesen settings are available in the Jeppesen view. Select More > Jeppesen to access the settings.

![Jeppesen Settings]

**Display VFR Theme** enables the Jeppesen (VFR) en route chart and VFR terminal procedures (Europe). This setting is disabled by default. When the Display VFR Theme setting is disabled, the Jeppesen (VFR) chart is removed from the Maps drop-down menu, and VFR terminal procedures are removed from the Procedures list.

**Show Chart Index Numbers** displays a procedure's index number below the procedure name in chart lists. Jeppesen index numbers (at the top of every terminal procedure) are usually three or four digit numbers enclosed in an oval. The index number helps to sort airports within a city and procedures within an airport.

3.8 **Viewing Jeppesen Charts**

Jeppesen charts and terminal procedures are available on the Maps, Airports, and Plates views. Display en route charts by selecting them from the map layer menu.

3.8.1 **Terminal Procedures**

Jeppesen terminal charts appear at the top of the procedures list. It is not possible to display FAA, NavCanada, or EuroControl charts above Jeppesen terminal charts. Jeppesen Terminal procedures are the default and will display automatically in the following scenarios.

- Tapping **Show Airport Diagram** in the FPL Route Editor.
- Adding an approach using Procedure Advisor.
- Displaying an airport’s taxi diagram automatically upon landing.

**NOTE**: A Pro Plus or higher subscription is required to overlay plates on the Maps view. If you add Jeppesen terminal charts to a Basic Plus plan, they will only be viewable in the Plates and Airports views.
3. JEPPESENE

3.8.2 En route Charts

All Jeppesen accounts include *global* VFR and IFR en route charts, no matter what terminal procedure coverage you have. Jeppesen en route charts are dynamic and customizable. As you zoom in, additional chart details are displayed. Jeppesen en route charts support always-up labels. Jeppesen global en route charts are approximately 1GB in size.

**NOTE**: Jeppesen en route charts are not available when using the following devices: iPad Mini 1, iPad 2, iPad 3, and iPhone 5 and earlier.

En route charts are available in the Maps view layer selector, at the top just under the Aeronautical layer.

3.9 Jeppesen Map Settings

Selecting any Jeppesen en route chart adds the Jeppesen-related settings to the Map Settings menu.

The selections only apply to the selected layer allowing you to mix and match map settings for each Jeppesen en route chart type. Refer to the following page for additional information.

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## 3. JEPPSESEN

The following table lists the map settings available with each Jeppesen en route chart type and what they do.

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<thead>
<tr>
<th></th>
<th>Jeppesen VFR</th>
<th>Jeppesen IFR (low)</th>
<th>Jeppesen IFR (high)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Map Theme</td>
<td>Choose between a Light and Dark map theme. The Dark Theme inverts black and white while preserving other colors.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Airports</td>
<td>Show or hide airport markers and labels, including private airports and helipads. Zooming into large airports will reveal their runway configuration.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Airways</td>
<td>Show or hide VFR corridors and IFR low airways, including labels, MEAs, MOCAs, and radials from nav aids.</td>
<td>Show or hide IFR low airways, including labels, MEAs, MOCAs, and radials from nav aids.</td>
<td>Show or hide IFR high airways, including labels, altitudes and radials from nav aids.</td>
</tr>
<tr>
<td>Waypoints</td>
<td>Show or hide VFR waypoints and IFR low waypoints.</td>
<td>Show or hide IFR low waypoints.</td>
<td>Show or hide IFR high waypoints.</td>
</tr>
<tr>
<td>Navaids</td>
<td>Show or hide navigation aids and labels, including NDBs, VOR-TACANs, and VOR-DMEs.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Airspace</td>
<td>Show or hide airspace boundaries and labels, including controlled airspace, Mode C, MOAs, SUAs, ADIZ, FIRs, and ARTCC radio frequencies.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cultural</td>
<td>Show or hide cultural labels, including spot elevations, urban areas, railway lines, parachute jumping areas and magnetic longitude lines.</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Roads</td>
<td>Show or hide major highways, roads, and streets.</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>
3.10 Jeppesen Documents

Purchasing Jeppesen coverage or installing a linked Jeppesen account adds the Jeppesen document catalog to your device. The Jeppesen document catalogs adds Jeppesen Airway Manuals for the installed coverage.

Jeppesen documents will remain on the device for as long as the Jeppesen coverage is installed. Jeppesen Airway Manuals can be printed but cannot be shared via email.
DOWNLOADS

Charts and aeronautical data can be viewed online but must be downloaded for offline use. When using ForeFlight for the first time, required downloads are automatically installed. Required downloads include an airport and navigation database, business directory (FBO data), obstacle database, and terrain database.

Select More > Downloads to access the Downloads view. The Downloads view displays all installed data with a green checkmark. Tap Data Settings and Region Settings to make download selections.
4. DOWN LOADS

4.1 Download Selections

All charts, terminal procedures, and high-resolution download selections are optional. Download selections are not synced between devices and must be made on each device signed into your account. Download selections are divided into two sections, data settings, and region settings.

Choose the type of data you want to download for offline use in Data Settings. Select the states, provinces, and countries in Region Settings.

4.1.1 Data Settings

Data Settings consist of various types of data. Each selected data type will be downloaded for the chosen regions (if available). It is not possible to have different data settings for different regions.

High-resolution basemap and terrain downloads are not associated with region settings. Selecting a high-resolution basemap and terrain download installs the data regardless of subscription type and region settings. After making data setting selections, tap the Downloads back button to return to the Downloads view to make region selections or to begin downloading.
4. DOWNLOADS

Data Type Definitions

The following data types are available for download.

- **Airport and Nav Database** is an international aviation database with over 27,000 airports and NAVAIDS from 220 countries. This data is used in the Airports view (frequencies, runways, hours, FBOs, etc.) and the Maps view (locations, routes, NAVAIDS, airspaces) and includes data used in the Aeronautical data layer.

- **Business Directory** contains information about FBOs and services at airports.

- **Worldwide Obstacles** are provided by Jeppesen and include hazards such as towers and bridges. Obstacles are shown as markers on the map when the Obstacles or Hazard Advisor layers are enabled.

- **Worldwide Terrain** is low-resolution terrain data that adds terrain features to the base map. This map provides global coverage and is only available if downloaded.

- **High-Resolution Basemap and Terrain** add additional detail to the base map. High-resolution terrain is a required download for the use of Synthetic Vision.

- **Airport Text and Diagrams** provide taxi diagrams, aerodrome charts, and A/FD, CFS, and AIP.

- **Terminal Procedures** include FAA, Nav Canada, and EuroControl arrival, departure, and approach plates for the selected regions.

- **VFR, IFR High, and IFR Low Charts** contain seamless en route charts for the United States, Canada, and Europe.

- **IFR Planning / Ocean Charts** contains IFR planning and ocean charts for the United States and Atlantic and Pacific oceans.

- **Helicopter Charts (USA)** include nine major metro areas and U.S. Gulf of Mexico VFR and IFR Helicopter charts (downloaded when the Gulf of Mexico is selected).
4. Downloads

4.1.2 Region Settings

Region settings are divided into four sections, United States, Canada, Europe, and Caribbean/Mexico/Central America. Regions can only be selected if they have been purchased. The Caribbean, Mexico, and Central American region is included with a United States subscription. To buy additional regions, visit www.foreflight.com/buy.

Tap a region to expand the menu. The download size (e.g., 44 MB) is listed to the right of the state, province, or country. Download size is dynamic and varies based on the selected data types and available data. A message is displayed after selecting the region if a data type is unavailable.

After region selections have been made, tap the Downloads back button to return to the Downloads view to make data setting selections or to begin downloading.
4. DOWNLOADS

4.2 Downloading Data

After selecting data types and regions, tap the Downloads back button in the upper toolbar. Downloads not already installed on your device become available for download immediately (internet connection required).

To install an individual download, tap the blue arrow. To download all pending downloads, tap Download at the bottom of the screen. The number of pending downloads and the size of pending downloads are displayed at the bottom of the Downloads view.

**Pending Downloads**

A progress bar is displayed at the bottom of the view when actively downloading data. The progress bar depicts the size of the active downloads.

**Active Downloads**

Stop all downloads anytime by tapping the Pause button at the bottom of the Downloads view. Stop individual downloads by tapping the pause button associated with the download. Downloads will continue where they left off when resumed.

Completed downloads display a green checkmark. When all pending downloads are complete, the Download button is disabled.

If data has not been downloaded to your device, ForeFlight will display the data over the air using your internet connection. Cellular internet connections are often unreliable when you fly, and your charts may be unavailable or appear blurry.

**NOTE:** Blurry charts are an indication that your charts are not downloaded.
4. DOWNLOADS

4.2.1 Updating Downloads

Aeronautical data is updated every 28 days. En route charts are updated every 56 days. Updated aeronautical information becomes available approximately five days before the current data expires.

When updated data is available for download, a red badge with a number appears on the More button. The number on the badge corresponds to the number of downloads available for the next data cycle. Select More > Downloads and tap the Download button to download the future data cycle. ForeFlight will continue to display the current data until the expiration date, also known as the change-over date. ForeFlight automatically displays the new data at the change-over date and removes the expired data from your device.
4. DOWNLOADS

4.2.2 Automatic Downloads
ForeFlight can automatically download new data when ForeFlight is open and connected to the internet. To automatically download data, the following criteria must be met:

- Automatic downloads enabled.
- Active internet connection (Wi-Fi or Cellular).
- One hour or more since manually downloading.
- The device has sufficient storage available.

When downloading data for the first time, a pop-up appears with an option to enable automatic downloads. Automatic downloads can also be enabled or disabled in More > Settings > Automatic Downloads.

Downloads over cellular
ForeFlight can download data using your device’s cellular network. Select More > Settings > Allow Downloads over Cellular to enable or disable this feature.

If Allow Downloads over Cellular is disabled and an attempt to download data over cellular is made, a pop-up warning message is displayed.

If Download is selected in the pop-up message, the Allow Downloads over Cellular setting is automatically enabled, and future downloads over cellular will be possible.

4.2.3 Background Downloads
Background downloads allow you to download pending downloads while ForeFlight is closed, you’re working in another app, or while the device is asleep. Background downloads are enabled in More > Settings > Background Downloads.

All pending downloads are downloaded in a single file when background downloads are enabled. Background downloads may take longer than those done in the foreground. Disabling background downloads is recommended if downloading over a slow internet connection or with a device with limited storage space.
4. Downloads

If downloading is started while the device is connected to Wi-Fi, it will automatically stop if it disconnects from Wi-Fi. Downloads that are started with cellular data will continue in the background. Background downloads may pause if the device is low on battery. Charging the device while downloading in the background is recommended.

Data downloaded in the background is installed the next time ForeFlight Mobile is opened.

4.3 Deleting Downloads

Expired data is deleted automatically, with some exceptions. If new data do not replace expired data, the expired data will remain on the device.

To delete an individual download (expired or active), swipe your finger from right to left across the entry. If the deleted data is selected in your download settings, you’ll be prompted to download the data again.

Downloads can also be deleted by tapping Delete > Delete All Downloads or Delete Expired at the top of the Downloads view. Deleting all downloads removes all installed downloads from your device. Deleting expired downloads only removes data that has expired and is still on your device.

4.3.1 Packed and Unselected Downloads

Charts downloaded to your device that are not part of a selected region in region settings, such as charts downloaded with Pack, are stored in the Packed and Unselected Regions. Deleting these charts when they are no longer needed or device memory is limited is recommended.
4. DOWN LOADS

4.4 Preflight Download Check

Ensure data is downloaded before every flight. To preflight your data, follow these steps.

1. Disconnect your device from Wi-Fi (if applicable) and enable Airplane Mode. This will keep ForeFlight from retrieving data over the Internet, as would happen in flight.

2. Open ForeFlight Mobile, go to the Airports page, and view airports along your route. Verify airport procedures indicate they are Saved on the Airports or Maps views.

3. Open Maps and select any en route charts you may need in flight. Zoom in to the airports you will be flying to and ensure the charts are not blurry.

4.5 Troubleshooting Downloads

ForeFlight data is hosted on a network of servers around the world. When you start a download, the data comes from the server closest to you to provide fast and reliable downloads.

Download time can vary depending on the amount of data you are downloading. For example, if downloading all items for the United States, approximately 10GB of data is downloaded. Even on a fast Wi-Fi connection, this will take significant time.

ForeFlight recommends only downloading data for regions you will fly within or near. Doing so will save significant time and disk space. If a download fails, ForeFlight automatically reattempts the download. If you see a red error message on the download, the additional attempts were unsuccessful, and the download will need to be manually attempted.

Troubleshooting tips:

- Reboot your iPad.
- Use another network or cellular data.
- Reboot your router.
- Temporarily disable or delete Virtual Private Networks (VPN).
- Temporarily disable or delete anti-virus applications.
## SETTINGS

Settings customize your ForeFlight experience. Select **More > Settings** to access the main settings view. The main settings view contains the majority of settings available for ForeFlight Mobile. ForeFlight Mobile settings do not sync between devices.

Settings specific to a feature may also be found within that feature’s view. For example, map-related settings can be found in the main settings menu and on the Maps view by tapping the **Map Settings** (gear) button. Conversely, Logbook settings are exclusively available in **More > Logbook > Settings**.

![Main Settings Menu](image)

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5. SETTINGS

5.1 Search Bar

The search bar near the top of the Settings menu filters the settings shown. The search bar is dynamic. Search results are updated as you type. Due to the number of available settings, the use of the search bar is recommended.

Searching for Downloads with the Search Bar

5.2 Brightness Slider

The brightness slider matches the iOS device’s brightness setting and can be used in lieu of the iOS device’s brightness setting.

Brightness Slider

5.3 App Theme

App Theme allows pilots to choose between a Light, Dark, or System theme. When System theme is selected, ForeFlight automatically selects light or dark theme based on the iPad/iPhone iOS settings.

Light and dark themes provide additional settings for adjusting the individual elements within ForeFlight. For example, when dark theme is enabled, the color of plates can be inverted. The individual Light and Dark settings ultimately determine ForeFlight’s appearance.
5. SETTINGS

5.3.1  **Light and Dark Settings**
Light and dark settings specify the *App Color*, *Aeronautical Map Theme*, and whether to invert the color of Plates, Charts, and Documents.

The **Light** setting results in menus with white backgrounds. The **Dark** setting results in menus with a dark blue background. The **Aeronautical Map Theme** controls whether the ForeFlight base map should be **Light** (tan), **Dark** (dark blue), or **Classic** (light brown).

Inverted plates and documents use black backgrounds and white text. When inverted colors are enabled, the colors on plates, charts, and documents are also inverted. Plates, charts, and documents can be inverted with the light or dark theme.
5. SETTINGS

5.4 Airport View Settings

The **Show Weather First** setting displays the airport’s METAR when the Airports view is selected. This setting also displays the airport’s METAR first in the **sidebar** when an Aeronautical map airport icon is tapped.

If this setting is disabled, the Airports view displays the last viewed tab and the Maps sidebar displays the airport info tab.

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**Airport View - Show Weather First Enabled**

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5. SETTINGS

5.5 Weather View Settings

Past TAF Translations displays expired TAF forecast periods in the various weather views when enabled. When disabled, expired TAF forecast periods are hidden from view.

5.6 Route View Settings

Airway Decoding allows pilots to choose between All Waypoints Shown and Bends Only. The Bends Only setting hides waypoints along an airway that do not cause a course change. VORs and NDBs will always be shown in an airway. When Bends Only is enabled, some smart airway labels are not displayed.

Airway Entry/Exit specifies if a route should start and end at any waypoint or at a navaid when using the Route Editor.

5.7 Map View

The following map-related settings are available in the Map View section of the main settings menu.

5.7.1 Auto Center

Auto Center Mode determines map orientation. The map can be orientated north up or track up. Track Up and Track Up Forward require the map to be centered on your location with detectable motion.

To center the map on your location, tap the auto-center (bullseye) button in the upper toolbar. When auto-center is enabled, the button is highlighted. If the map is not centered on your location, the map is orientated north up.

Auto Center Deactivate

Auto Center Deactivate controls if the map can be panned without first manually disabling auto center. The Automatic setting disables auto center when the map is panned. The Manual setting requires that you first tap the auto-center button on the map to deactivate it to be able to pan.
5. SETTINGS

5.7.2 Extended Centerlines

Extended Centerlines control if extended runway centerlines are displayed on the map. Extended centerlines are proportional to the runway length. For every 1000 feet of runway, ForeFlight shows a 1 nm extended centerline. For example, a 5000-foot runway displays a 5 nm extended centerline. Extended centerlines are only depicted for the runways at the airports in your route.

An extended centerline runway label can be tapped to display information about the runway, including winds, length, surface type, lighting, elevation, and associated procedures.
5. SETTINGS

5.7.3 Distance Rings

Distance rings display concentric rings around your aircraft’s position. No ring is displayed when zoomed out. As the map is zoomed in, rings will appear with up to three being shown.

When any automatic style is selected, ring scales adjust automatically when the map is zoomed in or out. Range rings will only show if a GPS position is received. If a time-based style has been selected, the rings are only displayed when you have a GPS fix and are moving at more than 10 knots.

Distance Ring Styles

Distance Rings can display distance by time (minutes) or length (nm or km). To set the preferred style, with Distance Rings showing on the map, tap on a Distance Ring label to reveal a slide-over. Select the preferred type from the list. Alternatively, go to More > Settings > Distance Rings Style.
5. SETTINGS

Green triangles on the rings align with the track direction and project where the current track will take the aircraft in relation to the Distance Ring. Ring time and distance labels are always displayed off the right-wing between the two and three o’clock positions, regardless of orientation.

5.7.4 **Track Vector**

Track Vector displays a vector (line) in front of your aircraft’s icon.

*Track Vector Length*

The Track Vector Length setting controls the length of the track vector based on a specified distance (in nautical miles) or the distance your aircraft will cover given the current speed and specified amount of time (in seconds or minutes).

While your track direction is changing at more than two degrees-per-second (i.e., the aircraft is turning), the track vector changes to a curve in the direction of your turn.
5. SETTINGS

5.7.5 Route Labels

Route Labels control if the waypoints in your route have labels on the Map. Labels are dynamic and will adjust to prevent overlapping. Route labels must be enabled to display approach procedure waypoints and minimum descent altitudes.

5.7.6 Current Location Marker

Current Location Marker specifies the aircraft icon used to show your location when in motion.
5. SETTINGS

5.7.7 Hazard Settings

Hazard Settings control the behavior of the Hazard Advisor and Profile View. There are three hazard-related settings: Corridor Width, Activation Speed, and Hazard Altitudes. Hazard settings are also available on the Map by tapping the hazard label gear button and Profile View by tapping the Profile View (gear) settings button.

Corridor Width controls the obstacles and terrain depicted in Profile View. Terrain and obstacles within half the distance of the selected corridor width are shown. For example, when corridor width is 2 nm (default), obstacles and terrain 1 nm on either side of the route centerline are depicted in Profile View.

Activation Speed controls when the selected Hazard Advisor altitude automatically changes to GPS altitude.

Hazard Altitudes controls Hazard Advisor and Profile View coloring. Select the altitudes for which a hazard must be from GPS altitude to be colored yellow or red.
5. SETTINGS

5.7.8  Map Touch Action

Map Touch Action controls the behavior of IFR and VFR charts. This setting is only available when an IFR or VFR en route chart is selected.

- **No Action** results in no map overlap changes when tapping on the map.
- **Bring chart to front** moves the chart to the top layer with a single tap. When a chart is on the top layer, it overlaps adjacent charts.
- **Bring chart to front with legends** moves the chart, chart legend, and chart border to the top layer with a single tap. When a chart is on the top layer, it overlaps adjacent charts.

5.7.9  Cockpit Sharing

Cockpit Sharing allows sharing routes between devices running ForeFlight Mobile when connected to the same Wi-Fi network.

5.7.10 Map Annotations

Show Annotations on Map determines if terminal procedure plate or airport diagram annotations are displayed on a plate when sent to Maps. This setting is also available on the Maps view. Tap the plate when depicted on the map to enable/disable Show Annotations.

![Approach Plate with Annotations](image)
5. SETTINGs

5.7.11  Auto-Receive Flight Plans

Auto-Receive Flight Plans loads new routes from connected Garmin navigators without user input. When disabled, new routes generate a pop-up notification with an option to load into ForeFlight.

5.7.12  Four-Color Radar

Four-color Radar enables radar in a low resolution, four-color scheme that complies with dBZ-to-color mapping standards defined by the Radio Technical Commission for Aeronautics. See the Legends Guide for color scale details.

5.7.13  Internet Radar Coverage

Internet Radar Coverage displays the area of available radar coverage while connected to the Internet. Areas with no coverage are shown with hash marks and a "Radar not available" label.

5.7.14  Breadcrumbs

Breadcrumbs are a thin green line indicating your aircraft’s path since takeoff. Breadcrumbs automatically activate after takeoff and end on short final. Breadcrumbs operate independently of Track Logs.

Tap a Breadcrumb anytime to view flight metrics. The Breadcrumb pop-up provides an option for saving the Breadcrumb as a Track Log.

Saving a Breadcrumb as a Track Log does not affect an ongoing Track Log recording.

**Breadcrumbs Clear After**

The Breadcrumbs Clear After setting controls the time that Breadcrumbs remain on the screen after landing. If a takeoff is not detected after the last landing within the selected time, Breadcrumbs are automatically cleared from the map.

**Breadcrumb Menu**

<table>
<thead>
<tr>
<th>Recorded Time</th>
<th>8m48s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance Traveled</td>
<td>32 nm</td>
</tr>
<tr>
<td>Average Ground Speed</td>
<td>221 kts</td>
</tr>
</tbody>
</table>

**Save as Track Log**

**Reset**
5. SETTINGS

5.7.15 Show Map Legend

The Show Map Legend setting displays a legend at the bottom of the Maps view when any of the following weather layers are selected.

- Radar
- Radar (Lowest Tilt)
- Enhanced Satellite
- Color IR Satellite
- Icing and Turbulence
- Clouds
- Winds (Temps)
- Winds (Speeds)

5.7.16 Marked Positions

Marked Positions displays a button on the left side of the Maps view. Tap the button to drop a green position marker at your current location. See Marked Positions for additional information.

5.7.17 Quick Filters

Quick Filters toggles the Aeronautical Map Layer quick filter buttons for Airports, Airspace, Waypoints, Navaids, Airways, ARTCC/FIR, Terrain, and Roads.
5. SETTINGS

5.8 Layer Selector

- **Multiple Selections** allows the maps layer selector to remain open while selecting various map layers. Tap outside the layer selector to close it.

- **Auto Zoom to Custom Content** adjusts the maps zoom level and positioning to display the entire custom content map layer when selected.

5.9 Map Annotations

- **Show Control** displays the annotation button on the left side of the maps view.

- **Auto Apple Pencil Drawing** automatically activates map annotations when touching the map with an Apple Pencil.

- **Annotations Timeout** specifies the amount of time before annotation mode is automatically disabled. Screen touches with an Apple Pencil, stylus, or finger reset the annotation timeout countdown.

5.10 Checklist

- **Speak** reads the Challenge or Challenge & Response portion of a checklist aloud.

5.11 Plate and Document Views

- **Lock Disables Buttons** controls if the lock switch on the Plates and Documents views disables the buttons. The lock switch disables pan, zoom, and all button touches (including the navigation bar) when enabled. When disabled, the lock switch only locks the plate and document pan, zoom, and page changing.

5.12 Traffic

- **Hide Distant Traffic (ADSB)** hides traffic more than 15 nautical miles or 3,500’ (above or below) your current GPS position. Only ADS-B traffic can be filtered with the Hide Distant Traffic setting.
5. SETTINGS

5.13 Search and Rescue

- **SAR Features** enable the SAR grid layers and SAR patterns. See the Search and Rescue Guide, available in Documents > ForeFlight, for additional information.

- **SAR Waypoints as Lat/Lon** displays SAR pattern waypoint labels as Latitude/Longitude instead of SAR-01, SAR-02.

5.14 Downloads

Download settings control how data is downloaded. For additional information, see the Downloads chapter.

- **Background Downloads** allow downloads to continue while ForeFlight is in the background. When enabled, all pending downloads are downloaded simultaneously. When disabled, ForeFlight must remain open during the download process and downloads are done four at a time.

- **Automatic Downloads over Cellular** allow downloads to complete using cellular data. Turning this on is only recommended for devices with unlimited data plans.

- **Automatic Downloads** allows ForeFlight to automatically download updates when they become available and when the device is connected to the internet.

5.15 Pack

- **Enable Auto-Check** automatically evaluates whether downloads are needed based on the planned route. When this setting is enabled, Pack displays a red exclamation badge when a new route is planned.

  When disabled, Pack evaluates the route when the Pack suitcase button is tapped. It is not possible to automatically pack for flights. Auto-check only evaluates your route to see if new data can be downloaded.
5. SETTINGS

5.16 Track Log

Track Log settings control how recordings are started. For more information, see the Track Logs chapter.

- **Enable Start/Stop Control** displays the Track Log record [REC] button and the Track Log timer in the bottom-left of the Maps view. Tapping the REC button starts or stops a track log recording.

- **Enable Auto Start/Stop** automatically records Track Logs. Track Logs are started when ForeFlight is open and detects a takeoff (accelerating climb at a speed greater than 40 knots) and ends when ForeFlight detects a landing.

5.17 Flights

- **Briefing Format** specifies the type of briefing generated for your device, Graphical HTML (U.S. only) or Graphical PDF (International). Flights outside the United States default to the Graphical PDF briefing. Classic (Text) briefings are no longer supported and will be removed in a future update.

- **Enable Fuel Orders** exposes the Fuel Order field on the Flights view. The Fuel Order field is used to create and send fuel orders to your destination FBO before the flight (Performance tier accounts only).

- **Translate Classic Briefings** converts METARs, TAFs, NOTAMs, CWA/AIR/SIGMETs, Synopses, and PIREPs to plain text in the classic text briefing.

5.18 Taxi Diagram

- **Auto Show Taxi** displays the landing airport’s taxi diagram upon landing.

- **Show Taxi on Map** displays the landing airport’s taxi diagram on the Maps view. When disabled, the taxi diagram is automatically displayed in the Plates view. (Pro Plus plan or higher required).
5. SETTINGS

5.19 Preferences

The Preferences section contains various settings.

5.19.1 Alerts

Alert settings control the behavior of in-app alerts. All alerts are displayed visually and can be announced audibly. See the Alerts chapter for more information.

- **Speak All Alerts** plays alerts audibly via your device’s speaker or a connected headset. When toggled, a confirmation message is audibly played. Use the iPad/iPhone volume buttons to adjust the volume.

5.19.2 Units/Time

The Units/Time menu contains the following settings:

- **Times** determine the timezone format. Local Time uses the device’s timezone. Station Time uses the timezone of the weather station/airport. Zulu Time displays time in UTC/GMT.
- **Wind Speed** specifies wind speed units (Knots, Miles per hour, Meters per second).
- **Pressure** specifies pressure units (Inches of mercury, hPa/millibars).
- **Temperature** specifies temperature units (Celsius, Fahrenheit, Automatic). When automatic is selected, weather sourced from official aviation sources (METARs, TAF) is displayed in Celsius. Non-aviation sources (daily forecasts) use the iOS device temperature format setting.
- **Visibility** specifies visibility format (Statute miles, Kilometers).
- **Coordinates** setting determines how coordinates are displayed in ForeFlight.

  - **DD.dd° degrees and hundredths of degrees.**
  - **DD°MM.mm - degrees, minutes, and hundredths of minutes.**
  - **DD°MM'SS" - degrees, minutes, and seconds.**
  - **MGRS 6-/8-/10-digit - Military Grid Reference System with three precision levels (more digits equates to greater precision).**
- **Aircraft Speed** specifies airspeed and groundspeed units (Knots, Miles per hour, Kilometers per hour).
5. SETTINGS

- **Distance** controls distance units (Nautical miles, Statue miles, Kilometers).
- **Altitude Instruments** specifies the altitude unit of altitude-related instruments (GPS altitude, climb gradient, etc.).
- **Bearing and Track Instruments** include Ruler, Synthetic Vision, and Map Instruments. This setting specifies if the instruments are relative to magnetic or true north.
- **Runway Length** displays runway length in feet or meters.
- **Precip Amount** specifies the unit of precipitation reports in daily weather. The automatic setting uses the device’s iOS region setting.

5.19.3  **Allow Device to Sleep**

When the Allow Device to Sleep setting is enabled, the iPad/iPhone is allowed to sleep after a period of inactivity. The device’s iOS auto-lock setting determines the inactivity period. Disable Allow Device to Sleep to ensure the iPad/iPhone will not enter sleep mode while ForeFlight Mobile is running in the foreground.

5.19.4  **Automatic Clock Check**

Automatic Clock Check verifies that the device’s system time is set correctly. If it is found to be incorrect, you will get an alert. Proper system time is essential for many features in the app. Enabling this setting is recommended.
5. SETTINGS

5.19.5 Enable Ownship

Enable Ownship specifies when GPS location is displayed.

- **Always** displays your location on the map when GPS accuracy is 100 meters or better. The location marker is hidden if GPS accuracy is worse than 100 meters.
  ForeFlight displays a dot with a pulsing halo when no motion is detected. When motion is detected, ForeFlight displays the selected current location marker orientated in the direction of the ground track with the pulsing halo.
  Aircraft position is also displayed on approach plates and airport diagrams with a Pro Plus or higher subscription.
  When Always is selected, location is displayed on plates with a pulsing halo when GPS accuracy is 25 meters or better. If GPS accuracy exceeds 25 meters, the pulsing halo is hidden from plates. If GPS accuracy exceeds 100 meters, the location marker and pulsing halo are hidden.
  The location marker is hidden if GPS data is not received for 20 seconds.

- **Never** hides the location marker on maps and plates at all times.

- **Limited** displays the location marker on airport diagrams when the speed is less than 80 knots. Above 80 knots, or when GPS location accuracy degrades below 25 meters, the location marker is hidden. In limited ownership mode, the location marker is hidden if GPS data is not received within the past 3 seconds.
  The location marker is not displayed on the map in limited ownership mode.

5.19.6 Ownship Not For Navigation

When enabled, this setting adds an Ownship not for navigation label to the top right corner of the Maps view and top left corner of the Plates view.
5. SETTINGS

5.19.7 Show Heliports

The Show Heliports setting displays heliports on the map when the Aeronautical Map is selected, and the setting is enabled. The setting also determines if the nearby airports list includes heliports. This setting can also be adjusted on the Maps view. Tap the map settings (gear) button in the upper toolbar and select Airports when the Aeronautical map layer is selected.

5.19.8 Show Private Airports

The Show Private Airports setting displays private airports on the map when the Aeronautical Map is selected, and the setting is enabled. The setting also determines if the nearby airports list includes private airports. This setting can also be adjusted on the Maps view. Tap the map settings (gear) button in the upper toolbar and select Airports when the Aeronautical map layer is selected.

5.19.9 Start on Last Screen

The Start on Last Screen setting allows ForeFlight to open to the last view used when the app is closed. If this setting is disabled, ForeFlight opens to the Airports view.

5.19.10 Synchronize User Data

The Synchronize User Data setting is unique to each device. When this setting is enabled, the data types listed below are synced to the ForeFlight servers and available on each device signed into your account.

- Aircraft Profiles
- Favorite / Recent Routes
- Favorite Airports
- Documents (Document Annotations)
- ScratchPads
- Track Logs
- User Waypoints
- Logbook
- Weight & Balance Profiles
- Flights

**NOTE:** Custom Content (with the exception of user waypoints) and Plate Annotations are not synced to your account.
5. SETTINGS

5.19.11 Enable Diagnostic Logs
The Enable Diagnostic Logs setting records diagnostic information for troubleshooting purposes. This setting is enabled by default and should remain enabled unless the ForeFlight Pilot Support Team instructs otherwise. Disabling diagnostic logging limits the Pilot Support team’s troubleshooting abilities.

5.19.12 Performance Logging Level
The Performance Logging Level setting is used to diagnose issues with app performance. Do not set this to anything other than zero unless instructed by a ForeFlight support team member, as it may negatively impact healthy app performance.

5.20 Weight and Balance
The following setting is available for the Weight and Balance feature.

- **Standard Weights** allows for default standard weights for males, females, and children.
MAP SETTINGS

Settings that are unique to the Maps view are found in map settings. Access map settings by tapping the settings (gear) button in the upper toolbar. Settings adjusted on the map are automatically synced with the main settings view. Map settings do not sync between devices. The following settings are available from the Maps view.

6.1 Screen Brightness

The brightness slider allows for additional dimming beyond your device’s lowest setting. At the highest setting, brightness matches the device setting.

6.1.1 Invert Chart Colors

The Invert Chart Colors inverts black and white colors on charts for improved low-light viewing (does not affect Street or Aerial maps). This setting does not affect the Aeronautical map and Jeppesen en route charts.

6.2 ForeFlight Map

The ForeFlight Map section controls elements related to the ForeFlight base map.

6.2.1 Map Theme

The Map Theme controls whether the ForeFlight base map is **Light** (tan), **Dark** (dark blue), or **Classic** (light brown).

6.2.2 Terrain

The Terrain setting offers three options:

- **Off** - Terrain is not depicted on the base map.
- **Shaded Terrain** - uses grayscale shading to depict terrain.
- **Colored Terrain** - uses coloring to depict terrain.

**Peaks, Passes, and Cables** display mountain peaks, passes, and cables on the map. This data is available with the high-resolution terrain download.
6. MAP SETTINGS

6.2.3 Place Labels

The Place Labels setting adds text labels to the map that identify political and geographic features. Place labels are responsive to dynamic text sizing.

6.2.4 Cultural Elements

Cultural element settings allow the base map to be customized to show or hide elements such as roads, railroads, urban areas, forests/national parks, and points of interest.

6.3 Aeronautical

Settings to customize the Aeronautical map are available when the Aeronautical map layer is selected.

When Aeronautical is not selected in the map layer menu, Aeronautical settings are hidden in the map settings menu. The following settings are available in the Aeronautical section.

6.3.1 Airports

The Airports setting determines the types of airports displayed when the Aeronautical layer is selected.

- **Show Airports** displays all selected airport types when enabled. When disabled, all airport types are hidden from the map. This setting is also available at the top of the Aeronautical Map quick filter as a quick filter button.

- **Heliports** displays or hides heliports on the Aeronautical map. When enabled, heliports also appear in the nearby airport list.

- **Private Airports** displays or hides private airports on the Aeronautical map. When enabled, private airports also appear in the nearby airport list.

- **Seaplane Bases** displays or hides seaplane bases on the Aeronautical map. When enabled, seaplane bases also appear in the nearby airport list.

- **Other Fields** displays or hides any airport types not classified as an airport, heliport, private heliport, or seaplane base.
6. MAP SETTINGS

6.3.2  Airspace

The airspace setting controls the display of aeronautical map airspace. The following airspace-related settings are available from the Map settings menu.

Show Airspace controls whether all selected airspace types are displayed when the Aeronautical map layer is selected. This setting is also available as a quick filter button.

Auto Highlight evaluates your planned route and highlights the airspace the planned route will intersect based on the selected aircraft’s climb, cruise, descent profile, or current in-flight track.

Airspace within 1,000 feet of the planned altitude and one nautical mile of the route is highlighted. In contrast, airspace outside 1,000 feet and one nautical mile is visible but dimmed to reduce clutter.

In-flight, airspace up to 50 nm ahead of the current track (also within +/- 1,000 feet of current altitude and within a 1-nautical mile corridor) is highlighted.
6. MAP SETTINGS

**Hide Airspace Above** filters airspace based on a user-specified altitude. When entering an altitude, values of 500 or more are treated as feet. Values from 5-499 are treated as flight levels. For example, 65 is expanded to 6500; 320 is expanded to 32000. Entering zero allows all airspace to show.

If you *plan* a flight or *climb* within 1,000 feet of hidden airspace along your route, the hidden airspace is automatically displayed. The Hide Airspace Above value is displayed as a label in the lower-right corner of the map.
6. MAP SETTINGS

**Customize Airspace**

The Customize Airspace section allows for specific types of airspace to be filtered from the aeronautical map. Toggling a setting hides or shows all types of the selected airspace.

- Controlled - Airspace that is class B, C, D, E
- SUA/MOA - Special Use Airspace/Military Operating Areas
- TRSA - Terminal Radar Surveillance Area
- Class E (USA) - Surface class E airspace (USA)
- Parachute Areas - Designated parachute jump areas
- Mode C - Airspace requiring mode C transponder around class B airspace.
- ADIZ - Air Defense Identification Zone.

**Worldwide Altitudes**

The Worldwide Altitudes setting specifies the type of airspace label to use. Worldwide altitude labels are dynamic and will reposition as the map is panned and zoomed. Worldwide altitude labels are required to see airspace labels outside the United States.

![Worldwide Altitudes Disabled](image1.jpg)  ![Worldwide Altitudes Enabled](image2.jpg)
6. MAP SETTINGS

6.3.3 Airways & Waypoints

Airways & Waypoints settings specify the type of airways to display (Low or High) when Airways is enabled.

Airway components (airways, navaids, and waypoints) can be toggled on and off to reduce map clutter. Quick filter buttons for airways, navaids, and waypoints are available on the map when Quick Filters are enabled.

Display Organized Tracks with the settings in the Airways & Waypoints section. Organized tracks require a Performance Plus subscription.

6.3.4 ARTCC/FIR

The ARTCC/FIR setting changes the map’s Air Traffic Control Center and Flight Information Region frequency stamps and boundaries. Three options are available Off, Low, and High. The low and high settings relate to low and high-altitude airspace.

6.3.5 Text Size Adjustment

Below the ARTCC/FIR setting is a slider for adjusting the map’s text size of aeronautical elements. The full range of the slider goes from 75% to 150% of normal text size. The slider does not affect place labels or text on other maps or charts.

6.3.6 Quick Filters

Quick Filters toggles the Aeronautical Map Layer quick filter buttons for Airports, Airspace, Waypoints, Navaids, Airways, ARTCC/FIR, Terrain, and Roads.

Quick filter buttons are located on the left side of the map and appear when Quick Filters are enabled and the Aeronautical Map is selected.
6.4 Auto-Center Mode

Auto Center Mode determines map orientation. The map can be orientated north up or track up. **Track Up** and **Track Up Forward** require the map to be centered on your location and motion must be detected. To center the map on your location, tap the auto-center (bullseye) button in the upper toolbar. When auto-center is enabled, the button is highlighted. If the map is not centered on your location or if motion is not detected, the map is orientated north up.

![Auto-Center Mode Settings](image)
6. Map Overlays

The map overlay section contains various settings for the features that can be overlaid on the map. Map overlay settings are dynamic and only display a setting if the applicable map layer is selected. For example, the Four Color Radar setting is only displayed when Radar (Composite) or Radar (Lowest Tilt) is selected.

6.5.1  Hide Distant Traffic (ADS-B)

The Hide Distant Traffic settings is displayed when connected to an ADS-B receiver. Hide Distant Traffic (ADSB) hides traffic more than 15 nautical miles or 3,500’ (above or below) your current GPS position. Only ADS-B traffic can be filtered with the Hide Distant Traffic setting.

6.5.2  Route Labels

Route Labels control if the waypoints in your route have labels on the map. Labels are dynamic and will adjust to prevent overlapping. Route labels must be enabled to display approach procedure waypoints and minimum descent altitudes.

6.5.3  Operational Notes

The Operational Notes setting adds Operational Note Flags to the Maps view when a route is planned. Operational Note Flags are a Performance-tier feature.

6.5.4  Extended Centerlines

Extended Centerlines control if extended runway centerlines are displayed on the map. Extended centerlines are proportional to the runway length. For every 1,000 feet of runway, ForeFlight shows a 1 nm extended centerline. For example, a 5,000 foot runway displays a 5 nm extended centerline. Extended centerlines are only depicted for the runways at the airports in your route.

An extended centerline can display information about a runway, including winds, length, surface type, lighting, elevation, and associated procedures. Tap the runway label on the map to display runway information.
6. MAP SETTINGS

6.5.4 Distance Rings

Distance Rings display concentric rings around your aircraft’s position that correlate to distance or time. No ring is displayed when zoomed out. As the map is zoomed in, rings will appear, with up to three being shown.

Distance Rings can display distance by time (minutes) or length (nm or km). To set the preferred style, with Distance Rings showing on the map, tap a distance ring label to reveal the sidebar. Select the preferred type from the list. Alternatively, go to More > Settings > Distance Rings Style.

When any automatic style is selected, ring scales adjust automatically when the map is zoomed in or out. Range rings will only show if a GPS position is received. If a time-based style has been selected, the rings are only displayed when you have a GPS fix and are moving at more than 10 knots.
Green triangles on the rings align with the track direction and project where the current track will take the aircraft in relation to the Distance Ring. Ring time and distance labels are always displayed off the right wing between the two and three o'clock positions, regardless of orientation.

Distance labels are always off of the right wing
6.5.5 Glide Advisor

Glide Advisor uses your aircraft’s glide ratio, current GPS altitude, surrounding terrain, and winds aloft to present a ring showing your glide range. Before use, Glide Advisor must be configured with your aircraft’s best glide speed and glide ratio. These settings can be entered in the Aircraft profile or the map settings menu when Glide Advisor is enabled.

The Glide Advisor ring shows when your GPS altitude is more than 200 feet AGL. When the Glide Advisor ring is displayed, a Glide Advisor label is shown in the lower-right corner of the map. Tap the label to select a different aircraft profile or adjust the aircraft’s glide characteristics. In the examples below, Glide Advisor demonstrates the difference between flying over relatively flat terrain and rising terrain.

Glide Settings

Glide Advisor requires your aircraft’s glide ratio to be entered in a specific format. The glide ratio should represent how far the aircraft can glide while losing a foot of altitude. Some flight manuals provide glide ratios in this format. Most glide ratios for powered, fixed-wing aircraft (excluding gliders) fall between 5 and 15. As a result, if your aircraft’s glide ratio is 8:1, enter 8 into the glide ratio field and the corresponding best glide speed.

Some flight manuals express glide ratios with different distance and altitude units. For example, 1.3 nautical miles per 1000 feet. To determine the glide ratio in the proper format, multiply the distance (1.3 nm) by the number of feet in a nautical mile (6,076.12) and divide by 1000. Enter the result (7.9) in the glide ratio field.
6. MAP SETTINGS

6.5.6 Track Vector

Track Vector displays a vector (line) in front of your aircraft’s icon in the direction of travel. The track vector length is set in the main settings menu by selecting More > Settings > Track Vector Length.

6.5.7 Breadcrumbs

Breadcrumb are a thin green line indicating your aircraft’s path since takeoff. Breadcrumbs automatically activate on takeoff and end when you land. Breadcrumbs operate independently of Track Logs.

Tap a Breadcrumb anytime to view flight metrics. The Breadcrumb pop-up provides an option for permanently saving the Breadcrumb as a Track Log.

Saving a Breadcrumb as a Track Log does not affect an ongoing Track Log recording. Breadcrumbs remain on the map for a specified amount of time. The amount of time is set in the main settings menu by selecting More > Settings > Breadcrumbs Clear After.
6. MAP SETTINGS

6.5.8 Map Legend

Map Legend displays a legend at the bottom of the Maps view when the following weather layers are selected.

- Radar
- Radar (Lowest Tilt)
- Enhanced Satellite
- Color IR Satellite
- Icing and Turbulence
- Clouds
- Winds (Temps)
- Winds (Speeds)

![Map Legend (Composite Radar)](image)

6.5.9 Map Annotations

Map annotations display the annotation button on the left side of the maps view. Tap the annotation button to enter annotation mode. Map annotation mode remains active after annotation inactivity for the amount of time specified in More > Settings > Annotations Timeout.

6.5.10 Marked Positions

Marked Positions displays a button on the left side of the Maps view. Tap the button to drop a green position marker at your current location. Marked Positions are only available with a Performance Plus plan. See Marked Positions for additional information.

6.5.11 Track Log Record Button

The Track Log Record Button displays a REC button on the Maps view for manually starting and stopping Track Logs. When enabled, the Track Log timer is displayed below the button. The timer is an indication that a Track Log is actively recording.
6. MAP SETTINGS

6.5.12 Four-color Radar

Four-color Radar enables radar in a low resolution, four-color scheme that complies with dBZ-to-color mapping standards defined by the Radio Technical Commission for Aeronautics.

6.5.13 Internet Radar Coverage

Internet Radar Coverage displays the area of available radar coverage while connected to the Internet. Areas with no coverage are shown with hash marks and a “Radar not available” label.

6.5.14 Map Touch Action

Map Touch Action controls the behavior of IFR and VFR charts. This setting is only available when an IFR or VFR en route chart is selected.

- **No Action** results in no map overlap changes when tapping on the map.
- **Bring chart to front** moves the chart to the top layer with a single tap. When a chart is on the top layer, it overlaps adjacent charts.
- **Bring chart to front with legends** moves the chart, chart legend, and chart border to the top layer with a single tap. When a chart is on the top layer, it overlaps adjacent charts.

6.6 Layer Selector

The layer selector section contains a single setting.

**Multiple Selections** allows the maps layer selector menu to remain open while selecting various map layers. Tap outside the layer selector to close it.

6.7 Opacity Slider

When a weather map layer or Hazard Advisor is selected, an opacity slider appears below the Multiple Selections setting. The slider adjusts map layer opacity.
6. MAP SETTINGS

6.8 Devices

Connected device appears at the bottom of the map settings menu when connected. Tap the connected device to view the same information that’s available by selecting More > Devices. See the Connect chapter for additional external device information.
APPLE iOS FEATURES AND SETTINGS

There are a few handy iPad features you’ll want to know about when using ForeFlight Mobile:

- **iOS Multitasking**: ForeFlight Mobile 12.4 and later on the iPad supports iOS Multitasking, allowing you to use ForeFlight in Split Screen or Slide Over with other apps at the same time.

- **Multiple Orientations**: The iPad supports portrait and landscape orientation. When you rotate an iPad from one orientation to another, an application typically alter its user interface to better take advantage of the space supplied.

- **Rotation Lock**: Having the screen rotate isn’t always a good thing. Rotation lock is helpful for preventing accidental rotation in turbulence. Newer iPads: Swipe down from the upper-right corner of the screen to open the Control Center and find the rotation lock soft-button. Older iPads: A physical switch is located above the volume buttons. When switched on, this prevents an application from changing its orientation. On some iPads, this switch instead functions as a “mute” switch. You can change the function of this back to a “lock” switch by using the iPad’s Settings application. Tap General, and use the options in the Use Side Switch to: section. If this section is not displayed, you may need to update your iPad’s version of the iOS operating system to enable this.

- **Settings App**: The iPad includes a special application called Settings. Within Settings, you can modify the way the iPad and its applications behave. ForeFlight-specific settings are addressed in the Settings section of this guide. All ForeFlight settings are available in the More view of ForeFlight Mobile as well.

- **Brightness Control**: There is a brightness control accessible in iPad Settings app. It is also available for quick access in the Control Center by swiping-down from the top of the screen. This control is helpful for reducing brightness at night, or for dimming the screen during the day to preserve battery life. For night use, if the iPad brightness control set to full dim (slider all the way to the bottom) doesn’t dim the screen enough, use the brightness slider in ForeFlight Mobile in the More view or at the top of the Maps Settings menu to dim the screen further. The ForeFlight brightness slider integrates with the iPad’s brightness slider, but allows for additional dimming beyond the lowest setting of the iPad’s slider.
7. iOS FEATURES AND SETTINGS

7.1 iOS Network Settings

iOS 14 requires that you grant specific permission for an app to connect to a “Local Network”, which includes the Wi-Fi connection made to ADS-B receivers and avionics such as the Sentry, Stratus, Avidyne IFD series, as well as Flight Simulators. Cockpit Sharing and ForeFlight Passenger also require the iOS Local Network setting be ON for ForeFlight & Passenger.

When you first open ForeFlight Mobile, you should see a pop-up asking you to allow ForeFlight to find and connect to devices on your local network. To permit this, tap OK.

If you tap Don’t Allow but later need to enable Local Network access, you can do so in either of two areas in Apple Settings:

- Privacy > Local Network > ForeFlight: ON
- ForeFlight > Local Network: ON
7.2 iOS Location Settings

For best position accuracy, enable *Precise Location* for ForeFlight Mobile (iOS 14 and later). Open the Settings app and follow one of the two options:

- **Privacy > Location Services > ForeFlight > Precise Location**: ON
- **ForeFlight > Location > Precise Location**: ON

![Location Services iOS 14 and later](image-url)
7. iOS FEATURES AND SETTINGS

7.3 iOS Multitasking and Split Screen

iOS Multitasking allows you to work with two apps at the same time. ForeFlight Mobile supports Multitasking, Split Screen, and Slide Over, on compatible iPads.

For full details about how this works in ForeFlight Mobile, please take a few minutes to review this video: Multitasking Support & Major Design Improvements.

This article from Apple is an excellent resource for how Split Screen and Slide Over work on iPads: Use multitasking on your iPad.

![Multitasking with ForeFlight Mobile](image)
AIRCRAFT

Successful flight planning begins with a complete aircraft profile. The Aircraft view is where aircraft profiles associated with your account are managed. When sync is enabled, aircraft profiles sync between the devices signed in to your account.

Select More > Aircraft to access the Aircraft view. Aircraft profiles can be managed with ForeFlight Web or ForeFlight Mobile. This guide primarily covers managing aircraft profiles with ForeFlight Mobile.
8. AIRCRAFT

8.1 Design

The Aircraft View is divided into two columns. The left column lists the aircraft associated with the account. Aircraft recently used for flight planning are listed at the top.

When the Aircraft view is displayed, tap any aircraft to make it the active aircraft. The selected aircraft is highlighted in blue, and its details are shown in the right column. Accounts with many aircraft profiles can use the search bar at the top of the list to filter the number of aircraft displayed. Filter aircraft by type or tail number. There’s no practical limit to the number of aircraft profiles associated with an account. When using an iPhone, navigate between the aircraft list and detail view by tapping the Aircraft back button in the upper toolbar.
8. AIRCRAFT

8.2 Creating an Aircraft Profile

To create a new aircraft profile, tap the [+] button in the upper toolbar and complete the aircraft details. Aircraft details are grouped into various sections. Some sections, such as the Weights section, may be automatically completed when an aircraft type is selected. If the automatically populated details are not correct, verify that the aircraft type is accurate, including any applicable supplemental type certificates (STC).

8.2.1 General

The General section is where basic information about the aircraft is specified. Manually enter or use the drop-down menus to complete the General section. Descriptions for each field are listed below.

**Tail Number** is for specifying the registration number, including the country code for the aircraft. Use only letters and numbers in the Tail Number field. The Tail Number field is copied to the filing form when filing a flight plan.

**Serial Number** is an optional field consisting of only letters and numbers.

**Aircraft Type** includes a built-in type code search engine. Enter the aircraft make or model in the search box. Scroll through the list to find your aircraft and select the appropriate type code.

**Aircraft Category** offers a menu to select **Airplane**, **Rotorcraft**, or **Other**.

**Aircraft Color** is where the colors of your aircraft are entered. Use the color wheels to select the colors of your aircraft. The leftmost color is the base aircraft color.

**Home Airport** allows for the entry of the ICAO code for the airport where the aircraft is based.

**Airspeed Units** specify whether the aircraft shall use **Knots** or **MPH**.

**Length Units** specify if the aircraft uses Inches, Feet, Meters, Millimeters, or Centimeters to calculate weight and balance.

**NOTE:** Ensure the aircraft type includes any applicable supplemental type certificates.
8. AIRCRAFT

8.2.2 Performance

The Performance section lists the aircraft’s performance profiles, Takeoff & Landing Performance, and Runway Analysis settings. Performance profiles contain climb, cruise, and descent values for flight planning purposes.

There are three types of performance profiles. Aircraft can have multiple performance profiles of each type.

- Basic Performance Profiles
- By-Altitude Performance Profiles (Performance Plus Required)
- ForeFlight Performance Profiles (Performance Plus Required)

**Basic Performance Profiles**

The Basic Performance Profile is included with all plans. When creating a new aircraft, the basic profile must be manually completed. Basic profiles contain an individual set of climb, cruise, and descent values. Only the cruise values are required to generate flight planning results. However, completing the climb and descent fields is recommended. There are no limits to the number of basic profiles an aircraft can have.

![Basic Performance Profile](image)
8. AIRCRAFT

**By-Altitude Profiles**

By-Altitude performance profiles are only available with Performance Plus and Business Performance plans. The by-altitude profile is a custom, user-generated performance profile that specifies aircraft performance by altitude.

By-Altitude profiles can only be created with ForeFlight Web. To create a custom by-altitude profile, sign in to ForeFlight Web and select Aircraft from the sidebar. Select an aircraft > select + Add Basic Performance Profile > **By-Altitude Profile** in the performance section.

Enter climb and descent information for your aircraft. Include climb and descent fuel flow at low and high ends of your aircraft’s operating range. ForeFlight will interpolate climb and descent performance based on the entries.

Provide a name for the en route performance profile (e.g., Economy Cruise) and define your aircraft’s Max Ceiling. Enter aircraft performance for every row up to the aircraft’s max ceiling using the aircraft’s performance charts/tables. When the table is complete, select **Save** at the bottom of the screen.

Multiple custom profiles can be created if necessary. The custom profile can be set as the aircraft’s default by selecting **Make Default** near the top of the screen. Custom performance profiles can be selected in ForeFlight Mobile once complete.

---

**By-Altitude Performance Profile**

- **CLIMB MODEL**
  - Climb Name: Standard Climb
  - Low altitude point fuel flow (pph): 16
  - High altitude point fuel flow (pph): 12

- **DESCENT MODEL**
  - Descent Name: Standard 500 FPM descent
  - Low altitude point fuel flow (pph): 12
  - High altitude point fuel flow (pph): 8

- **CRUISE MODEL**
  - Cruise Name: Economy Cruise
  - Aircraft Max Ceiling (ft): 35,000

<table>
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<tr>
<th>PRESSURE ALT (FT)</th>
<th>CLIMB IAS (KTS)</th>
<th>RATE OF CLIMB (FPM)</th>
<th>CRUISE IAS (KTS)</th>
<th>FUEL FLOW (PPH)</th>
<th>DESCENT IAS (KTS)</th>
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<td>660</td>
<td>160</td>
<td>12</td>
<td>165</td>
</tr>
</tbody>
</table>
8. AIRCRAFT

**ForeFlight Performance Profiles**

ForeFlight performance profiles are only available with Performance Plus or Business Performance plans. ForeFlight performance profiles are created by ForeFlight using aircraft manufacturer performance data.

ForeFlight performance profiles are comprised of *detailed* by-altitude climb, cruise, and descent models for highly accurate flight planning results. When selecting an aircraft type, the number of en route cruise performance models is depicted in blue.

Available manufacturer data determines the number of profiles. The number of available profiles should match the number of performance profiles in your aircraft's flight manual.

![Available ForeFlight Performance Profiles (Cruise)](image)

**IMPORTANT:** Ensure the correct aircraft type is selected including serial number, supplemental type certificate (STC), gross weight increase (GWI), and power plant conversion.
When an aircraft is selected that has a ForeFlight Performance Profile, the Performance section lists the available climb, cruise, and descent models. The profile names and values are derived from manufacturer data.

It’s not possible to review specific performance values associated with a profile. For example, if you wanted to know the true airspeed for the Max Cruise Power 1700 RPM profile at FL180 and 4°C, you would not be able to do that in ForeFlight.

To determine performance values for a specific altitude and temperature combination, refer to the performance section of your aircraft’s flight manual.

### Performance Model Adjustments

If your aircraft does not achieve the same performance specified by manufacturer data, use the performance model adjustments to get more accurate flight planning results. Performance model adjustments are synced to the aircraft profile.
8. AIRCRAFT

**Model Adjustments (Climb and Descent)**

Climb and descent models are biased by a fixed time or fuel amount. For example, if your aircraft consistently burns more fuel during a climb than planned, add a positive fuel bias to the climb performance model. Similarly, enter a negative time or fuel amount if your aircraft burns less fuel or reaches cruise altitude faster than planned.

**Model Adjustments (Cruise)**

Cruise model adjustments are accomplished by specifying a percentage. For example, if ForeFlight consistently calculates an estimated time en route that is 10% more than your actual results, tap the cruise model you’ve planned with and slide the **Cruise Speed Adjustment** to +10%.

A positive bias increases the planned true airspeed or fuel burn by the specific percentage. A negative bias reduces the planned true airspeed or fuel burn by the percentage specified.

If the aircraft has more than one climb, cruise, or descent profile, tap **Apply Bias to All** to apply the bias to all the models. **Clear Bias** restores the profile to its original settings (zero bias). To make a performance profile the default for the aircraft, tap **Make Default**. The default profile calculates planning results when no other profile is selected.

### 8.2.3 Glide Performance

The Glide Performance section allows for the specification of the aircraft's all-engines off glide characteristics. Entering a value in this section will affect the display of the Glide Advisor on the map.

To enter the aircraft’s glide information, enter a whole or decimal number in the Best Glide Ratio field. For example, aircraft with an 8.5:1 glide ratio should enter 8.5. Similarly, aircraft with a 9:1 glide ratio should enter 9. This field may be auto-populated with manufacturer data.
8. AIRCRAFT

8.2.4 Altitudes

The altitude section sets a default cruise and maximum altitude for the aircraft. The Maximum Ceiling field sets the upper cut-off for the Altitude Advisor. Not entering a value for Maximum Ceiling will result in the Altitude Advisor returning results up to FL570.

The default cruise altitude is used when planning with ForeFlight Mobile and ForeFlight Web. When planning with ForeFlight Dispatch, an optimal altitude for the route is determined, and the default cruise altitude is ignored.

8.2.5 Weights

The weights section specifies the various aircraft weight limits.

- **Weight Units** allow an aircraft to use pounds or kilograms for flight planning.
- **Basic Empty Weight** should be edited to reflect the actual basic empty weight of the aircraft.
- **Max Zero Fuel Weight** is an auto-populated value and should be verified. The maximum weight the aircraft can weigh with zero fuel onboard is the maximum zero fuel weight limit.
- **Max Ramp Weight** is an auto-populated value and should be verified.
- **Max Takeoff Weight** is an auto-populated value and should be verified.
- **Max Landing Weight** is an auto-populated value and should be verified.

8.2.6 Weight and Balance

The Weight and Balance (W&B) section is used to create W&B profiles. W&B profiles are configured by defining the following variables for your aircraft:

- W&B Profile Name
- Aircraft Basic Empty Weight (BEW)
- Aircraft Basic Empty CG
- Station Descriptions
- Station Locations (arm)
- Station Weight Limits (if applicable)
- Aircraft Forward and Aft CG Limits
8. AIRCRAFT

W&B Templates

Select aircraft have prebuilt W&B templates which only require the entry of basic operating weight, CG, and station verification to complete. Aircraft with prebuilt templates have a **W&B Template Available** label when selecting an aircraft type.

If a prebuilt template does not exist for your aircraft, you can create a custom W&B profile using the blank template. For detailed instructions on creating and using ForeFlight Weight & Balance, refer to the Weight & Balance guide available in Documents > ForeFlight.

**NOTE:** For detailed instructions on creating and using ForeFlight Weight & Balance, refer to the Weight & Balance Guide available in Documents > ForeFlight.
8. AIRCRAFT

8.2.7 Fuel

The fuel section specifies information about the aircraft’s fuel system. The available fields are based on the subscription type.

<table>
<thead>
<tr>
<th>FUEL</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Fuel Type</td>
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<tr>
<td>Fuel Units</td>
<td>Gallons</td>
</tr>
<tr>
<td>Start/Taxi/Takeoff Fuel</td>
<td>5.33</td>
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</table>

**Basic Plus and Pro Plus**

<table>
<thead>
<tr>
<th>FUEL</th>
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<tbody>
<tr>
<td>Fuel Type</td>
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<td>Pounds</td>
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<tr>
<td>Default Reserve Fuel</td>
<td>187</td>
</tr>
</tbody>
</table>

**Performance Plus**

The following fields are available in the Fuel section.

- **Fuel Type** determines fuel weight based on the selected fuel’s density.
  - **100LL** and **Other**: 6.0 pounds per gallon.
  - **Jet-A** and **Jet-A Prist**: 6.75 pounds per gallon.

- **Fuel Units** specify the aircraft’s fuel consumption format. Choose between Gallons, Liters, Pounds, or Kilograms.

- **Start/Taxi/Takeoff Fuel** specifies the fuel your aircraft will consume during Start, Taxi, and Takeoff.

- **Total Useable Fuel** is an auto-populated value and should be verified.

- **Default Reserve Fuel** specifies the minimum amount of reserve fuel each flight should be planned with. The default reserve fuel is used unless the selected Reserve Policy exceeds the default reserve.
**Dispatch Only Fuel Fields**

Aircraft with a Dispatch license include additional fuel fields for specifying a reserve fuel policy. To use an aircraft with Dispatch, the aircraft must be published. Published aircraft can only be edited with ForeFlight Web. As a result, it is not possible to edit a Dispatch aircraft profile with ForeFlight Mobile.

**Reserve Policy** specifies the default reserve policy for the aircraft. New flights automatically use the specified reserve policy unless another policy is selected.

**Default Contingency Fuel**

When a fuel reserve policy is selected that mandates contingency fuel, Dispatch automatically populates the Default Contingency % field with the appropriate amount. The contingency fuel percentage is set to zero if no contingency fuel is required per the reserve fuel policy. To manually add or edit contingency fuel, use ForeFlight Dispatch manually enter a value. For additional information, refer to the ForeFlight Dispatch Guide.
8. AIRCRAFT

8.2.8 Filing Section

The filing section is where the aircraft's equipment, wake category, and special considerations for filing purposes are specified. For detailed information on choosing the correct codes, reference the ForeFlight Filing Guide available in-app at Documents > ForeFlight > ForeFlight Filing Guide or online at www.foreflight.com/filing-guide.

FAA & ICAO Equipment

Equipment codes specify the communication and navigation equipment installed on the aircraft. Select the appropriate equipment for your aircraft if it is installed, serviceable, and the flight crew is qualified to operate it. ForeFlight files all flight plans using the ICAO filing form. As a result, it is not necessary to enter FAA Equipment. The option to enter FAA Equipment will be removed from ForeFlight in the future.

ICAO Surveillance Codes

ICAO Surveillance codes specify the aircraft’s transponder and ADS-B equipment types.

ICAO Wake Category

ICAO Wake Category is automatically selected based on manufacturer data and should be verified. The following table should be used to verify the ICAO wake category.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Weight Range</th>
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</thead>
<tbody>
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<td>Light</td>
<td>7,000 kg (15,500 lbs.) or less</td>
</tr>
<tr>
<td>Medium</td>
<td>7,001 kg up to 135,999 kg (15,501 lbs. to 299,999 lbs.)</td>
</tr>
<tr>
<td>Heavy</td>
<td>136,000 kg (300,000 lbs.) or more</td>
</tr>
</tbody>
</table>

Aircraft - ICAO Wake Categories

ICAO Perf-Based Nav (PBN)

ICAO Performance Based Navigation (PBN) codes specify an aircraft’s Area Navigation (RNAV) and Required Navigation Performance (RNP) capabilities. You can select up to 8 RNAV + RNP options.
**8. AIRCRAFT**

*Other Information* includes ICAO flight plan *optional* fields. Some entries may be required depending on the information you include in your flight plan.

<table>
<thead>
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<th><strong>Other Information Definitions</strong></th>
</tr>
</thead>
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<tr>
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</tr>
<tr>
<td><strong>ORGN</strong></td>
</tr>
<tr>
<td><strong>PER</strong></td>
</tr>
<tr>
<td><strong>RALT</strong></td>
</tr>
<tr>
<td><strong>REG</strong></td>
</tr>
<tr>
<td><strong>RIF</strong></td>
</tr>
<tr>
<td><strong>RVR</strong></td>
</tr>
<tr>
<td><strong>SEL</strong></td>
</tr>
<tr>
<td><strong>STAY INFO</strong></td>
</tr>
<tr>
<td><strong>SUR</strong></td>
</tr>
<tr>
<td><strong>TALT</strong></td>
</tr>
<tr>
<td><strong>TYP</strong></td>
</tr>
</tbody>
</table>
**8. AIRCRAFT**

**STS Special Handling** specifies the default handling status for the aircraft.

<table>
<thead>
<tr>
<th>Flight Status</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Altitude reservation (ALTRV)</td>
<td>A flight operated in accordance with an altitude reservation.</td>
</tr>
<tr>
<td>ATFM exempt (ATFMX)</td>
<td>A flight approved for exemption from ATFM measures by the appropriate ATS authority.</td>
</tr>
<tr>
<td>Firefighting (FFR)</td>
<td>Fire-fighting.</td>
</tr>
<tr>
<td>Flight check (FLTCK)</td>
<td>Flight check for calibration of nav aids.</td>
</tr>
<tr>
<td>Hazardous material (HAZMAT)</td>
<td>A flight carrying hazardous material.</td>
</tr>
<tr>
<td>Head of States (HEAD)</td>
<td>A flight with Head of State status.</td>
</tr>
<tr>
<td>Medical flight (HOSP)</td>
<td>A medical flight declared by medical authorities.</td>
</tr>
<tr>
<td>Humanitarian (HUM)</td>
<td>A flight operating on a humanitarian mission.</td>
</tr>
<tr>
<td>Military separation (MARSA)</td>
<td>A flight for which a military entity assumes responsibility for separation of military aircraft.</td>
</tr>
<tr>
<td>Medical Evacuation (MEDEVAC)</td>
<td>A life-critical medical emergency evacuation.</td>
</tr>
<tr>
<td>Non-RVSM in RVSM (NONRVSM)</td>
<td>A non-RVSM capable flight intending to operate in RVSM airspace.</td>
</tr>
<tr>
<td>Search and rescue (SAR)</td>
<td>A flight engaged in a search and rescue mission.</td>
</tr>
<tr>
<td>Military/police (STATE)</td>
<td>A flight engaged in military, customs or police services.</td>
</tr>
</tbody>
</table>
8. AIRCRAFT

8.2.9 Dingy

The Dinghy section specifies the type, capacity, and color of any dinghies carried onboard the aircraft. If you carry more than one dingy, enter the count, total capacity (i.e., 2, 10-person dinghies = 20 Persons), and color.

8.2.10 Emergency

The Emergency section specifies the type of emergency equipment on board the aircraft. Choose the appropriate equipment from the drop-down menus if your aircraft carries Life Jackets, Radios, or Survival gear.

Life Jackets

- **Fluorescein** - Powder used to dye water (Sea dye)
- **Light** - Life preserver mounted light
- **UHF** - Ultra-high frequency portable radio
- **VHF** - Very-high frequency portable radio

Radios

- **ELT** - Emergency Locator Transmitter equipped
- **UHF** - Ultra-high frequency portable radio
- **VHF** - Very-high frequency portable radio

Survival

- **Desert** - Survival kit equipped for desert environments
- **Jungle** - Survival kit equipped for jungle environments
- **Maritime** - Survival kit equipped for maritime environments
- **Polar** - Survival kit equipped for polar environments
8. AIRCRAFT

8.2.11 Nav Canada

The Nav Canada section depicts options for specifying the aircraft’s Undercarriage and ELT type. This section is only visible to ForeFlight Canada subscribers. Nav Canada information is transmitted to the appropriate FIC when filing VFR flight plans in Canada.

ForeFlight subscribers without Canada coverage can specify the information on the filing form when planning VFR flights in Canada. If an ELT is set in the Emergency section, the ELT Type should be specified in the Nav Canada section.

### Undercarriage

- Wheels
- Skis / Skids
- Floats
- Amphibious
- Wheels and Skis

### ELT Type

- None
- Automatic
- Automatic Deployable
- Fixed
- Automatic Fixed
- Automatic Portable
- Personal
8. AIRCRAFT

8.3 Sharing Aircraft

Aircraft profiles can be shared via AirDrop, message, or email. To share an aircraft, select the aircraft profile and tap the share button in the right corner of the upper toolbar. Choose how to share the profile: AirDrop, Message, or Mail.

If an aircraft is shared via email or message, the recipient must tap the link in the email or message to open ForeFlight Mobile. If shared via AirDrop, ForeFlight Mobile opens automatically. Once ForeFlight has opened on the recipient’s device, tap Accept to add the shared aircraft.

Shared aircraft appear in the Aircraft list with a grey icon and the name of the pilot who shared the aircraft.

If an aircraft is shared by a Performance Plus account to a Basic Plus or Pro Plus account, the recipient will not have access to ForeFlight Performance profiles or by-altitude profiles. Basic Performance Profiles are accessible by the recipient.

Aircraft are shared as read-only profiles. Shared aircraft are locked and cannot be edited by the recipient. Modifications to a shared aircraft by the profile’s owner are reflected on the recipient’s device.

To modify a shared aircraft as the recipient, the profile must be copied. Once a shared aircraft is copied, duplicate profiles will exist on the device.

The editable duplicate profile will not have the shared profile icon. Once a shared aircraft profile has been copied, the original locked (read-only) shared profile can be deleted if desired.
8. AIRCRAFT

8.4 Copying Aircraft

Published, shared, and user-created aircraft profiles can be copied from the Aircraft view. Copying aircraft create editable versions of read-only published or shared aircraft profiles. Copying is also helpful if you fly multiple aircraft of the same type. To copy an aircraft, open the profile and select Copy Aircraft from the bottom of the aircraft details view. Copied profiles are exact replicas of the original profile. There are no indications that a profile was copied.

8.5 Deleting Aircraft

To delete an aircraft, swipe your finger from right to left across the entry in the list view and tap Delete. Alternatively, open to profile and select Delete Aircraft from the bottom of the details view.

Published aircraft can not be deleted using ForeFlight Mobile. Read-only shared aircraft can only be deleted with the swipe/delete technique.
8. AIRCRAFT

8.6 Published Aircraft

Multi-pilot accounts can publish company aircraft profiles. When an aircraft profile is published, all devices signed in to the account can access the published profiles. Published aircraft profiles can not be edited in ForeFlight Mobile. Only account administrators can manage published aircraft profiles.

To set up company-managed aircraft profiles as the administrator of a multi-pilot account, sign in to www.plan.foreflight.com and select Aircraft from the sidebar.

Select an aircraft to publish or create a new profile. Once the aircraft profile is complete, click Publish in the lower-right corner of the screen. Published aircraft are available in ForeFlight Mobile once they’re published. When an aircraft is published, a Published tag appears below the aircraft registration and type in the list view.

Published aircraft can only be edited by account administrators. Published aircraft changes are immediately reflected in ForeFlight Mobile.

Clicking Unpublish revokes access to the aircraft for all users other than the administrator. Unpublished aircraft do not appear in ForeFlight Mobile and cannot be selected for flight planning. Published aircraft cannot be deleted. To delete a published aircraft, the aircraft must first be unpublished.
Flight planning with ForeFlight is done with the Maps or Flights view. The views do not sync with one another, however, it is possible to send routes between them.

For most pilots, ForeFlight recommends planning with the Maps view. Start by specifying a departure and destination using the route editor or touch-planning. With departure and destination points specified, use the Route Advisor, Procedure Advisor, and Altitude Advisor to finish planning.

Once complete, send the route to Flights to brief and file the flight plan (if applicable). Customers new to ForeFlight are encouraged to watch the Basics of Flight Plan Filing Webinar. For additional webinars, visit www.foreflight.com/support/webinars.

9.1 Planning with Search

The Maps and Airports views provide a search bar in the upper toolbar. The search bar can be used to plan a route. Create a route with search by typing identifiers, separated by a space, in the correct order. Tap the route in the search results to add it to the route editor (FPL editor).

Airways, arrivals, departures, and custom waypoints are supported with search. Your current location, if it can be determined, can be used as the origin for your route. Enter “D” followed by an identifier to plan directly to a location. ForeFlight replaces the “D” with your position. For example, entering D KLAX, plans a route for your current location direct to Los Angeles International Airport.

Entire airways can be viewed on the map by searching for the airway identifier. For example, V16. Airways can also be used in a route. For example, NIKOL V244 ILC. ARINC 424 coordinates (5275N) can also be entered in the Search box or Route Editor.
9. FLIGHT PLANNING

Terminal procedures, as well as associated transitions, are supported in a route. If the procedure requires a runway, ForeFlight will prompt you for one and provide an example. When briefing and flying terminal procedures, it is critical to *always* refer to the published arrival/departure plate as the ForeFlight Maps view is *not able to show heading vectors and all altitude info.*

When building a route in the search box you can also provide basic performance information about your aircraft. These can be in any order, but must come after the route waypoints.

**Example searches:**

- **KJFK KSFO** - this is a simple direct route from NY to San Francisco.
- **D KSFO** - this is a direct route from your current position to San Francisco.
- **KJFK FLW 32.3N/99W** - this is a route from NY to the FLW VOR to a lat/lon waypoint.
- **KSFO FLW/320/15** - this is a route from KSFO to a point on the 320 radial 15nm from FLW VOR. If a VOR is not given as the reference waypoint, then the directional information is assumed to indicate a bearing, not a radial. Enter "M" or "T" after the bearing to position the point on the magnetic or true bearing.
- **KCLT RDU J209 ORF J121 SIE.CAMRN4 KJFK** - this route includes multiple jet airways and an arrival.
- **KUZA KOSH 8000ft** - this is a route from Rock Hill to Oshkosh at an altitude of 8,000’. The selected aircraft’s performance profile is used because fuel burn and true airspeed cannot be entered in the Search box.
- **KJFK YQM V311 YQX 5050N 5330N 5315N EGLL** - This hypothetical route from JFK to London Heathrow uses ARINC 424 coordinates between Gander and Heathrow.

A route search can also include a tail number of an aircraft setup in the More > Aircraft view. When that aircraft has performance data it will be automatically used. Lastly, you can also indicate a departure time in your route search; ForeFlight will use this time to incorporate the proper winds aloft forecasts into your time and fuel usage calculations. If you don’t provide a time, ForeFlight Mobile assumes you are departing ASAP.
9. FLIGHT PLANNING

You can include the departure time as a specific time or as a time relative to now, as a local time or Zulu time.

- **KUZA KOSH 8000 1315Z** - The route details will be calculated for conditions starting at 1315Z. The time can be designated in Zulu time, as in the example, or local time, such as: 13:15, 1:15p, 1:15pm, 1:15a, 1:15am, or 1:15 (with no am/pm given, ForeFlight will assume you intend the next upcoming 1:15).

- **KUZA KOSH 8000 +60** - The route details will be calculated for conditions starting 60 minutes from now. This relative time must begin with a + and may be specified in minutes, hours, or a combination; +60 or +60m for minutes, +2h for hours, +2:30 for 2 hours 30 minutes.

A route entered in search will automatically be transferred to the route editor. If you enter a new route in the search box it will replace the route in the route editor. To clear the current route from the search box, tap the “X” in the search bar. To clear the route from the route editor, change to the **Edit** view and tap the **Clear** button, then tap **Clear All**.

![Clearing a Route](image-url)
9. FLIGHT PLANNING

9.1.1 Scheduled Flight Search

You can use the search bar to find scheduled (upcoming) flights for an aircraft and load them into the Route Editor. Search by tail number (e.g. N12345), call sign (e.g. NGF345), or commercial flight number (e.g. SWA44).

ForeFlight searches FlightAware for any flights that are either currently en route or set to depart in the next 24 hours and displays those flights in a list. Each flight listed includes the departure and destination airports, the filed altitude, the departure time, and the filed route. Tap on a flight to load the route and altitude into ForeFlight’s flight plan editor.

If ForeFlight Mobile is receiving ADS-B data while in-flight, you can also search for an N-number or callsign (full or partial) to locate that target on the Map.

9.1.2 Street Address Search

If your device is connected to the Internet, you can search for a Street Address. Tap on an address in the search results to locate it on the map and add it to your route (either “Direct To” or “Add to Route”) or save it as a user waypoint by tapping Save.
9. FLIGHT PLANNING

If you have a Performance Plus plan with U.S. coverage there is an available Offline Address Database that lets you search for U.S. state and territory street addresses while the device is in-flight without Internet access.

To use the Offline Search, tap More > Downloads > Data Settings > and enable Street Addresses. This will allow the Street Address database to download for each selected state.

Offline Search supports the standard format for U.S. street addresses, specifically the address number, street name, street suffix (including contractions), town/city name, two-letter state identifier, and zip code.

ForeFlight only requires the first two terms to begin searching and returning matches, and it prioritizes matches that are closer to your position. Finding addresses that are far away, especially those in other states, requires additional terms like the state and zip code.
9. FLIGHT PLANNING

9.2 Planning with Maps

Planning a flight with the Maps view is accomplished using search, the route editor (FPL Edit mode), touch-planning, or a combination of the three. Procedure Advisor, Route Advisor, and Altitude Advisor are used for planning cruise altitudes, routes, and arrival, departure, or approach procedures.

When planning with touch, enabling the Aeronautical Map layer is recommended. Aeronautical map elements respond to a single tap reducing the number of taps necessary to plan a flight.

9.2.1 Touch-Planning

To plan a flight with touch-planning, tap an Aeronautical Map element (airport, waypoint, navaid) and use the Direct To or Add to Route options at the top of the sidebar. Selecting Add to Route appends the element to the end of the existing route. Selecting Direct To creates a route from your present position direct to the element.

When the Aeronautical map is not enabled, press and hold the map the reveal the Add to Route menu. Tap an element in the Nearby list to add it to the route. Tap More > Details in the Add to Route menu to reveal the Hold Advisor.
9. FLIGHT PLANNING

9.2.2 Route Rubber-Banding

The Maps view supports rubber-banding. Rubber-banding a route is useful for planning around terrain, inclement weather, and airspace. To use route rubber-banding, add two or more points to the route. Tap and hold the route line until a blue circle appears. Without lifting your finger, drag the route line on the map. When your finger is lifted from the screen, the Insert into Route menu appears in the sidebar.

The Insert into Route menu list the coordinates where your finger was lifted and nearby airports, nav aids, and waypoints. Use the buttons near the bottom of the menu to filter the nearby list. Tap the coordinates or a nearby element to insert it into the route.

Rubber-banding around terrain
9. FLIGHT PLANNING

9.2.3 Route Editor

Planning with the route editor is accomplished with the keyboard. Tap the FPL button and select Edit to display the route editor. With the route editor displayed, tap in a dark blue blank space to reveal the keyboard.

Buttons on the left side of the route editor specify the aircraft, performance profile and cruise altitude. The right side buttons open Route Advisor, Procedure Advisor, and set the Estimated Time of Departure (ETD).

Manually enter airport, waypoint, and navaid identifiers to plan a route. Route elements are color-coded based on type.
9. FLIGHT PLANNING

Route Element Menus

The route element bubbles respond to touch. Tap an element to reveal the menu. To pan the map to a point in the route, tap the entry and select Show on Map.

To plan a direct route to an entry, tap the route element and select Direct To.

To remove an entry, tap it and select Remove from Route. Alternatively, tap and hold your finger on an entry to pick it up and drag it out of the route editor. Release your finger from the screen to delete it.

To move an entry, touch-hold on it to pick it up then move it to the new location and lift your finger to let go.

To add a route item in the middle of the route, tap any existing item to display the action menu for that item. Tap either of the “Insert...” buttons to show the ID entry field. Type in the new entry to add and press Insert or tap the return key on the keyboard.

Tap on the Departure or Destination bubble and choose Select Runway... to open the runway selection pop-up. The pop-up shows a list of available runways along with the most recent wind data.
9. FLIGHT PLANNING

When you choose a runway, that runway is then highlighted on the Maps page: at the Departure airport with blue chevrons on the runway and white chevrons extending out from the runway centerline, and at the Destination airport with an extended blue line with white chevrons leading to the runway centerline. If you choose a runway and traffic pattern via the Procedure Advisor, the blue chevrons will reflect that runway choice.

Arrival: blue line and white chevrons leading to runway
9. FLIGHT PLANNING

The Along-Track Offset Before... option allows you to add a point at an arbitrary distance before the end of the leg. Multiple Along-Track Offsets can be added to your route, and to an individual leg.

When you tap “Along-Track Offset Before...” the popup shows the total distance of that current leg. Enter the distance in nautical miles before the ending point (eg: a distance less than the total distance) at which you would like to add the point.

The point is then shown as in the example above “15 Before KLBB”. If you send the route to Flights, that point is then converted into a latitude/longitude coordinate.
Set Altitude/Speed is available to Basic Plus and Pro Plus subscribers. This feature allows pilots to specify an altitude, speed, or flight rule change at a waypoint.

Set Altitude/Speed/Time adds the ability to include a delay or stay at a waypoint. Set Altitude/Speed/Time is only available for Performance Plus and Business Performance subscribers.

When Set Altitude/Speed/Time is selected, a waypoint menu appears with options for entering a specific altitude, speed, delay duration, and flight rule change.

The waypoint menu can be accessed in three ways.

- Tap a waypoint in the FPL editor and select Set Altitude/Speed/Time.
- Tap a route element on the map and select More > Set Altitude/Speed/Time.
- Tap a waypoint in the Profile View.

Altitude Changes

The set altitude option allows pilots to plan routes with changing cruise altitudes. This may be useful when planning around airspace or terrain. En route altitude changes are reflected in the following locations:

- FPL editor in parenthesis next to the waypoint they're associated with.
- Maps view next to the waypoint when the Route Labels map setting is enabled.
- Profile View route line.
9. FLIGHT PLANNING

When determining flight planning results, ForeFlight factors the selected aircraft’s performance policy, forecast weather, and cruise altitude. Altitude changes are displayed in the Navlog. Altitude changes are also included in the route section of the filing form and are transmitted when filing.

**NOTE**: Altitude changes are displayed in the Navlog for all waypoints except latitude/longitude waypoints.

To add an altitude change to the route, select a waypoint from the Profile View, Map, or FPL editor. Select Set Altitude/Speed/Time (if necessary) and enter the new cruise altitude for the waypoint.

If the altitude change is to begin at the waypoint, select Start At when entering the new cruise altitude. If a climb or descent is to be started before the waypoint so that the altitude is reached at the waypoint, select Cross At. Multiple altitude changes can be added to a route provided:

- The altitude change does not require the aircraft to exceed its climb or descent capability.
- The altitude change does not occur during the initial climb or final descent phase of flight. If an altitude change is entered during the climb or descent phase, the altitude change will not be reflected in the Profile View or Navlog.

Using Profile View to add an altitude change is recommended to aid in evaluating airspace and hazards when making changes.

**Speed Changes**

Speed change allows pilots to file flight plans with changes to the planned true airspeed. Speed changes are included in the route section of the filing form and are transmitted when filing. Speed changes are generally not required for flight plans outside of EuroControl airspace.

To add a speed change, select the waypoint where the change is to occur from the Profile View, Map, or FPL editor. Select Set Altitude/Speed/Time and enter the new cruise speed.

Speed changes are displayed in the FPL editor next to the waypoint in parentheses and on the map when Route Labels are enabled. ForeFlight does not factor in speed changes when determining flight planning results. Thus the Navlog does not reflect manual changes to speed.
9. FLIGHT PLANNING

**Delays/Stays**

ForeFlight Mobile supports delays (FAA/NavCanada) and stays (Eurocontrol) for flight planning and filing purposes. Add a delay to your flight plan with the **Set Altitude/Speed/Time** option (Performance Plus and Business Performance).

Basic Plus and Pro Plus customers can manually enter delays and stays using the formatting: `identifier/Dh+mm`. Below is an example of a 15-minute stay at the waypoint VENAR: `VENAR/D0+15`.

15 minute stay at VENAR

Delays and stays can be added to en route waypoints, latitude-longitude, fix-radial-distance, intersections, and navaids.

A maximum of nine delays/stays are supported per flight. Stays are not supported for flights outside of Eurocontrol airspace. Delays (US) are not supported for international flights. Delays/Stays cannot be added to terminal arrival or departure procedures.

When a route containing a delay/stay is sent to Flights for filing purposes, the delay/stay is included in the flight's route section. When filing a flight plan with a stay, Eurocontrol requires remarks (STAYINFO).

To add a delay or stay using the **Set Altitude/Speed/Time** option:

1. Plan a route using the Maps flight plan editor.
2. Tap the route element where the delay/stay is to take place.
3. Tap **Set Altitude/Speed/Time**.
4. Enter a duration using the time picker.
5. Add remarks (EuroControl required).
6. Tap anywhere outside the pop-up window to save the changes.

Remarks added with the flight plan editor pop-up are copied to field 18 (Other Information/STAYINFO) of the ICAO filing form.
9. FLIGHT PLANNING

**Flight Rule Changes**

The Flight Rule change option allows pilots to plan and file composite flight plans. Composite flight plans are generally only filed in Europe. To plan a composite flight:

1. Enter the route in the flight plan editor.
2. Tap the waypoint in the route where the flight rule transition is to occur.
3. Select Set Altitude/Speed.
4. Tap Flight Rules and select VFR or IFR.

When a flight containing a rule change is sent from Maps to the Flights view, the flight rule change is automatically added to the route. When filing the flight plan, it is necessary to select the appropriate Flight Rule in the Flight Plan Type section.

When filing a composite flight plan for the first time, pilots are encouraged to contact the appropriate agencies to ensure the plan was filed correctly.

**Note:** Flight Rules do not automatically update on the filing form when planning a composite flight. Flight rules must be *manually* changed on the filing form.
9. FLIGHT PLANNING

9.2.4 Slash Codes

The Route Editor supports various elements that are defined with a forward slash.

<table>
<thead>
<tr>
<th>Slash Code</th>
<th>Example</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIX/RAD/DIST</td>
<td>Fix, radial, distance.</td>
<td>Worldwide</td>
</tr>
<tr>
<td>Ex: IAH/025/19</td>
<td>19nm from IAH on the 025 radial</td>
<td></td>
</tr>
<tr>
<td></td>
<td><img src="image1.png" alt="Image" /></td>
<td></td>
</tr>
<tr>
<td>FIXRADDIST</td>
<td>Alternative not using “slash” to separate elements. RAD &amp; DIST = 3 digits, with leading 0’s if needed</td>
<td>US only</td>
</tr>
<tr>
<td>Ex: LFK225030</td>
<td>30nm from LFK on the 225 radial</td>
<td></td>
</tr>
<tr>
<td></td>
<td><img src="image2.png" alt="Image" /></td>
<td></td>
</tr>
<tr>
<td>FIXRAD/FIXRAD</td>
<td>Plots a point at the intersection of one fix and radial with the other fix &amp; radial.</td>
<td>Worldwide</td>
</tr>
<tr>
<td>Ex: LFK270/CLL030</td>
<td><img src="image3.png" alt="Image" /></td>
<td></td>
</tr>
</tbody>
</table>
# 9. FLIGHT PLANNING

## FIX/Dh+mm

Delay $h$ hours, $mm$ minutes, at the fix, which can be a VOR, Waypoint, Airport identifier, or FIXRADDIST.

**Ex:** LEGGE/D0+25
Delay 25 minutes at LEGGE

**Ex:**
CTF090010/D1+05
Delay 1 hour 5 minutes at a point 10 east of CTF VOR

## STAY/hhmm

Stay (delay) at the preceding waypoint for $hh$ hours and $mm$ minutes.

**Ex:** EKLAD/STAY0010
Delay 10 minutes at EKLAD

See [How do I file a STAY at a waypoint within my flight plan in Europe](#) for more details.

**NOTE:** STAY requires a waypoint after the “STAY”. If you are adding a STAY at the final waypoint in your route before the airport you **must** enter it directly in the Flights: Route box. In the Flights: Route box enter the waypoint, then the STAY, then DCT the same waypoint.

eg: for a route ending ...SHA EINN where you wanted to STAY/0030 at SHA, enter it in the Flights: Route box as:

...SHA STAY/0030 DCT SHA
### FIX/N0000F000

Change Speed (N0000 in knots) or Altitude (F000 in flight level) at that fix.

**Ex:**

CLT/N0155/F110
Change to 155 kts and 11000' at CLT

**NOTE:** Can also be selected by tapping the route “bubble” and choosing “Set Altitude/Speed”.

---

#### Worldwide

<table>
<thead>
<tr>
<th>ETA</th>
<th>Fuel</th>
<th>Wind</th>
</tr>
</thead>
<tbody>
<tr>
<td>0000</td>
<td>17.0</td>
<td>29 kts tail</td>
</tr>
</tbody>
</table>
9. FLIGHT PLANNING

9.3 Route Line

The route line drawn on the map is color-coded to indicate your real-time progress.

<table>
<thead>
<tr>
<th>Color</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magenta</td>
<td>Lines represent the active leg of the flight plan. The first leg of a new route is always magenta.</td>
</tr>
<tr>
<td>Blue</td>
<td>Lines represent future legs.</td>
</tr>
<tr>
<td>Orange</td>
<td>Lines represent completed legs.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Style</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dashed</td>
<td>Lines indicate an approximate path to the next waypoint. Like solid lines, they can be magenta, blue, or orange. This is common when you expect radar vectors from ATC during an instrument procedure.</td>
</tr>
<tr>
<td>Solid</td>
<td>Lines indicate a direct path to the next waypoint.</td>
</tr>
</tbody>
</table>
Waypoints in the route are drawn with an icon to represent their type, such as a VOR. Tap on any leg in your route to access certain information and actions. The route leg popup includes the length and magnetic course, and if the leg is part of a named airway, the popup also includes the name of the airway, the leg’s MEA, and the leg’s MOCA, if it has one. The buttons along the top of the popup allow you to activate the leg (Fly Leg), fly Direct to the waypoint at the end of the leg, or Delete the waypoint at the end of the leg.

If an Airport or Runway Closure NOTAM exists for an airport in your route, it is indicated by a red warning icon on the airport’s route bubble. Tap the bubble and choose View Alert NOTAM to see the NOTAMs.
9. FLIGHT PLANNING

9.3.1 Operational Note Flags

The Airport and Nav Database includes Jeppesen-sourced Operational Notes. Notes can be issued for airspace, airways, waypoints, navaids, and more. Operational Notes can be displayed in the Sidebar regardless of subscription type or settings.

With a Performance-tier subscription, numbered flags can be displayed on the map for each Operational Note that exists along the planned route. Flags are numbered sequentially for each Operational Note encountered. Tapping a flag highlights it and opens the Sidebar with the details of the Operational Note displayed.

To enable Operational Note Flags:

1. Open the Map Settings menu (gear button in upper toolbar).
2. Scroll down and enable the Operational Note setting.

NOTE: Operational Notes can be viewed in the Sidebar with the Operational Note setting disabled. The Operational Note setting only enables the flags.
9. FLIGHT PLANNING

Flags

Operational Note Flags are displayed at the waypoint where the note exists.

If an Operational Note relates to airspace, a flag is displayed at the point where the route intersects the airspace. The planned altitude (including climb and descent) must be within 1000 ft (vertically) of the airspace for the flag to appear.

Multiple Operational Notes

When an Operational Note is co-located with a waypoint, tapping the flag results in the Sidebar displaying the Operational Note and the waypoint. Tap the numbered flag to display the details of the Operational Note.

When more than one Operational Notes exist where a flag is located, the flag will show the range of notes, separated by a dash (e.g., 6 - 9). Tap the flag to display the notes in the Sidebar.
9. FLIGHT PLANNING

9.4 Route Advisor

The Routes button opens Route Advisor, which displays a list of potential routes that you can select for a pair of departure and destination airports. To the right of the list is a Route Preview, showing the path of every route on an interactive map. Tap on a route in the list to highlight it on the map. You can pan and zoom around the Route Preview map and tap the Zoom to Route button in the bottom left to return to a view of the full route. Tap Select Route after tapping on a route in the list to add the route in the Route Editor. This will replace any route that is already there.

When a Performance Profile has been selected, the estimated time enroute and fuel burn based on that profile are shown for each route on the right, along with the route’s total distance.

Route Advisor requires an internet connection to load new routes for an airport pair, but once those routes are loaded they can be viewed offline as long as the same departure and destination airports are entered in the Route Editor.

Types of routes shown include:

- **Recommended** (Performance-tier only) - provides the best route based on the winds, aircraft, time/fuel savings, and chance of being cleared as filed.
- **TEC/Preferred** - these routes are commonly used and may include an altitude or range of altitudes that are typically given with the route.
- **ATC Cleared** - these are routes that ATC has cleared in the recent past. These show the departure time of the most recently-cleared flight, the number of times a route has been cleared in the past year, and the type of aircraft and clearance altitude for which the route was given.
- **Airway** - these are victor-airway based routes.
9. FIGHT PLANNING

9.4.1 Route Constraints

If needed you can specify constraints to include or exclude any waypoint from your route, and avoid any FIR. Tap **Constraints** in the upper-right to specify the waypoints to include or avoid, or the FIR(s) to avoid.
9. FLIGHT PLANNING

9.4.2 Eurocontrol Valid and Invalid Routes

For any route that passes through Eurocontrol airspace, Route Advisor will evaluate the route against Eurocontrol’s complex system of route constraints and display a “Eurocontrol Valid” or “Eurocontrol Invalid” label beneath the route. For European routes the Route Advisor will also show if a route is Y or Z.

If needed to find a “Eurocontrol Valid” route through complicated European airspace, tap the “Constraints” button in the upper-right corner of the Route Advisor window to choose maximum and minimum altitudes, as well as flight rules (VFR, IFR, Y, Z).

IMPORTANT: Eurocontrol validation may fail if your aircraft’s ICAO configuration is incomplete or incorrect. Before planning a flight, make sure to correctly set up your aircraft’s ICAO configuration in More > Aircraft.
9. FLIGHT PLANNING

9.5 Altitude Advisor

When you create a new flight, the altitude is automatically set to your aircraft’s default cruise altitude. Open Altitude Advisor to review other altitudes. The highest altitude shown is based on the value for your aircraft’s maximum ceiling altitude.

All altitude options are evaluated by ForeFlight’s planning engine and performance results are shown next to each one, including the average head/tailwind component over the entire route.

If performance results are not shown for a given altitude (eg: “-----”) it means that your aircraft cannot achieve the desired cruise speed quickly at that altitude, due to warmer than standard temperatures, payload/fuel weight, a cruise speed that is faster than can be achieved at that altitude, or a route too short to achieve that altitude.

The buttons along the bottom of Altitude Advisor allow you to filter the altitudes shown. The VFR/IFR buttons on the left filter the altitudes to those permissible for the selected flight rules. The Westerly/Easterly/All buttons on the right filter altitudes to those that are fileable based on your flight’s direction. ForeFlight will automatically filter this list to only show relevant altitudes as you make changes to a flight.

If you have entered your aircraft’s climb performance on the More > Aircraft page, the Altitude Advisor will automatically calculate whether it is possible to reach the listed altitude based on your aircraft’s rate of climb and the distance of the route.

When connected to a Sentry or other ADS-B or XM receiver, Altitude Advisor™ will only display wind effects if you have received recent winds aloft data for the entire route.
9. FLIGHT PLANNING

9.6 Procedure Advisor

The Procedure button in the top right of the Flight Plan Edit view opens the Procedure Advisor allowing you to add or replace Arrival procedures (STAR), Departure procedures (SID), Approaches, VFR traffic patterns and Search & Rescue (SAR) patterns in the route.

Departures, Arrivals, Approaches and Traffic Patterns require that at least one airport be entered in the Route Editor. SAR patterns can be entered without an airport in the Route Editor.

9.6.1 Departure or Arrival

Tap Departure or Arrival to see an inset map of the different STARs and SIDs available from the airport. The inset map can be panned and pinch-zoomed so you can see details of the different options. If the departure or arrival has an aircraft type restriction, it is indicated by a colored tag: Piston, Turboprop, or Jet.

Tap a name in the list on the left to see all of the transition options for that procedure.

Then tap the Transition (and runway if required), and tap Add to Route to insert that procedure into the route.
9. FLIGHT PLANNING

If you have Pro Plus or Performance Plus as well as Jeppesen coverage (purchased directly through ForeFlight or via a linked Jeppesen account) georeferenced SIDs/STARs will also be shown in the Procedure Advisor.

To close the Procedure Advisor window and return to the Maps view, tap Close or tap anywhere not on the Procedure Preview window.

Once the Departure or Arrival has been added you can change it or the selected runway by tapping the colored Departure oval in the Route Editor and choose Change Departure... or Change Runway...

Once the Arrival has been added you can change it or the selected runway by tapping the colored Arrival oval in the Route Editor and choose Change Arrival... or Change Runway...

Tap Approach to see the available approaches for that airport. If a current METAR is available, the runways with the most favorable winds are highlighted in the list.
9. FLIGHT PLANNING

Procedure Advisor NOTAMs

If a NOTAM affects an available runway, a red tag is displayed. Tap the View Alert NOTAM banner at the top of the runway list to view the relevant NOTAM or NOTAMs.

Tap an Approach to see the preview including the available IAFs. If you have a Pro Plus or Performance Plus subscription, the plate associated with a given approach will automatically appear on the inset map when you select the approach, and will automatically be added to the Map when you close the Procedure Advisor.

Choose an IAF by tapping in the list on the left, or on the preview Map, then tap Add to Route.

If you have a Performance Plus or Business Performance plan the Enhanced Approach Procedure Markers will show the IAF and FAF with unique icons, and the waypoint labels include any crossing speed & altitude restrictions for each point. You can also specify the Approach Minimum altitude, which appears as a magenta marker for easy reference during the approach. NOTE: Route Labels must be ON (in Maps Settings) for Approach Mininmums to be displayed.
**Augmented Procedures** expand on the Custom Approach Minimum field by pairing high-quality Jeppesen data with pilot-entered inoperative airport equipment to show the relevant minimums, supplementing the information on the approach plate and helping to reduce the chance of errors.
Once the Approach has been added you can change between approaches or IAFs by tapping the Procedure Advisor button again and selecting a new Approach.

If an Approach entry includes a hold, ForeFlight Mobile will automatically insert the correct Direct, Parallel, or Teardrop entry based on the direction you’re coming from.
9. FLIGHT PLANNING

Visual Approach

Visual Approaches are available in both the Approach and Traffic Pattern menus. Open Procedure Advisor by tapping the Procedure button, select the Visual for the desired runway, specify the Traffic Pattern Altitude in MSL or AGL (either from the selection list or by entering your desired altitude) then add the Visual Approach (with or without Traffic Pattern entry) to the route.

After adding the Visual Approach, a TPA (in MSL) pattern entry waypoint marker is added to the route.
9. FLIGHT PLANNING

Traffic Pattern

Tap the **Procedure** button, then tap **Traffic Pattern** to display VFR traffic patterns for the airport at the end of the current route. If current winds are available, the runway selections with the best winds are highlighted in the list. Wind direction, speed and age of observation are also shown at the bottom of the list (scroll down if necessary to see the winds). If a NOTAM affects an available runway, a red tag is displayed. Tap the View Alert NOTAM" banner at the top of the runway list to view the relevant NOTAM or NOTAMs.

After selecting a runway the available pattern entry options are displayed, such as Cross Midfield or Straight-in. Selecting **Straight In** adds a 4 nm final to the route.

For non-towered airports the entries are sorted based on each runway’s pattern side (right or left).

Additionally, entries are highlighted that make the most sense for your route’s direction of flight. Tap an entry to add it to the end of the current route (or to replace one already in the route). Traffic patterns are automatically removed from a route when certain route edits are made, such as reversing the route.
9. FLIGHT PLANNING

Hold Advisor

Insert a Hold from within Procedure Advisor by tapping the Procedure button, then tap Holding Pattern to insert a hold at the point in the route preceding the destination, or if the route is direct to the airport, to insert a hold immediately before the destination airport.

![Procedure Advisor](image)

Tap any waypoint in your route, or tap a navigation point elsewhere on the map to add a hold at that location or tap a colored oval in the route editor and choose “Hold...” to insert a hold at that point:

Regardless of which method is used to insert a hold, Hold Advisor includes an option to select the fix, and customize parameters for inbound or outbound legs, the pattern’s length (defined by either time or distance), left or right turns, and optional altitude, speed, and EFC (Expect Further Clearance) settings.

After adjusting any settings tap Add to Route to add the Hold to the route. The Hold Advisor also automatically inserts the correct Direct, Parallel, or Teardrop entry based on the direction of the hold and the direction you’re coming from.
9. FLIGHT PLANNING

**Editing Holds**

After adding the holding pattern to your route you can make additional changes to it by tapping the grey “Hold” bubble in the FPL Editor, or by tapping the point on the route where the hold was inserted.

Tap “Expand…” to change the hold into individual points.

ForeFlight Mobile does not currently support sending holding patterns added using Hold Advisor to connected avionics via Flight Plan Transfer. Holds that are a part of an approach can be sent to connected avionics.

If you send a build a route including a hold then send it to another pilot via email, the hold is automatically expanded in the route in the "FPL" file attached to the email.
9. FLIGHT PLANNING

Search and Rescue

On the iPad, Search and Rescue (SAR) patterns can also be inserted using the Procedure button (when the Enable Search and Rescue setting is ON). For more details about SAR features, see the Search and Rescue Supplement, in Documents > ForeFlight.
9. FLIGHT PLANNING

Procedure Actions - Tap green approach “oval” in the Route Editor

Once an approach has been added to the Route you can perform several actions by tapping the green approach oval in the Route Editor and choosing the desired action:

Change between Approaches or IAFs by tapping **Change Approach...** or **Change IAF...**

If a hold is automatically added as part of an approach but you want to remove it, tap **Remove Hold in lieu of PT**. If you need to re-add the hold to the approach tap **Add Hold in lieu of PT**.

Vectors to Final

Tap **Activate Vectors to Final** to plot a direct-to route from your present position to a point 3nm outside the FAF. This erases any existing IAF and draws a light magenta 30nm extension from the FAF. You can reactivate Vectors to Final anytime to redraw the line from your current position to the point 3nm from the FAF.

Vectors to Final can also be activated via the Procedure Advisor button: re-select the approach and choose **Activate Vectors to Final**.
9. FLIGHT PLANNING

3D Procedure Preview

Tap the green approach oval in the Route Editor then tap **3D Procedure Preview** to see a 3D preview of the approach, including the IAF, IF, and FAF. The navlog in 3D Procedure Preview includes any altitude and speed restrictions included in the approach.

**NOTE:** If the Instrument Approach has already been added to the route, it will also be included when doing a 3D Preview of the entire route.

Reverse

The Reverse button reverses the current route, and removes SIDs, STARs and Approaches.
9. FLIGHT PLANNING

9.7 Pack

Pack is an optional preflight planning tool that downloads charts, plates, weather, NOTAMs, fuel price data, and more to your device for offline use. Pack is included with all subscriptions and can be accessed from the Maps or Flights views.

The data included in a Pack download varies depending on your download selections, planned route, and ForeFlight subscription. Weather, NOTAM, and fuel data downloaded via Pack are temporarily stored on your device and automatically deleted once they become obsolete or more current data becomes available (via the internet, ADS-B, or XM).

Information downloaded with Pack is accessed using the same techniques as when your device is connected to the internet.

Packing Data for Offline Use
### 9. FLIGHT PLANNING

#### 9.7.1 How to Pack

You can Pack for a flight with Maps or Flights. When planning with Maps and the **Enable Auto-Check** setting is on, a red exclamation point (!) is displayed on both the Pack (suitcase) and FPL buttons when data is available to download.

**Packing with the Maps view**

To Pack with the Maps view:

1. Plan a route in the Maps view.
2. Tap the **Pack** (suitcase) button to open the Pack menu.

**Packing with the Flights view**

To Pack with the Flights view:

1. Enter a route in the Flights view.
2. Scroll to the bottom.
3. Tap **Pack** to open the Pack menu.
9. FLIGHT PLANNING

Pack Menu

The Pack pop-up menu is displayed whenever the Pack button is tapped. Hide the menu by tapping Close or somewhere on the screen outside the menu. The Pack menu includes an interactive map. The map displays the planned route in blue and an approximate Pack coverage corridor in grey. The map’s Pack coverage corridor encompasses 25 nm of airspace on either side of the route. However, the data that gets packed can exceed the depicted corridor. See the following sections for additional information.

Pack can only download data for one flight at a time. If you attempt to pack a new flight while Pack is actively downloading data, a pop-up will appear with an option to pause the current Pack download.

The Pack menu lists downloads as individual items. The estimated file size and an option to download are displayed on the right side of the menu. To download an individual item, tap the single download button (blue circle with down arrow). To download all Pack items, tap Pack at the bottom of the menu.
9. FLIGHT PLANNING

9.7.2  Packed Weather and NOTAM Data Overview

Pack downloads METARs, TAFs, MOS forecasts, and (textual) Airport NOTAMs for the airports within 25 nm of the planned route and 50 nm of the departure and destination airports. Pack only downloads Daily Weather forecasts for the airports that are included in the planned route.

Pack downloads the following map layers on a global scale:

- AIR/SIGMET/CWAs
- NOTAMs (graphically depicted NOTAMs)
- Fuel: 100LL and Jet A

**Packing with a Pro-Tier subscription**

If you have a Pro-tier subscription or higher, Pack downloads the data discussed above in addition to the following map layers:

- Clouds
- Surface Analysis
- Icing (US) and Icing (Global)
- Turbulence (US) and Turbulence (Global)

Pack does not download global data for the above map layers. These map layers are broken into large rectangular sections that are hundreds of miles across. Pack only downloads the sections that the planned route intersects.
9. FLIGHT PLANNING

Packing with a Performance-Tier subscription

If you have a Performance-tier subscription, Pack downloads all data in addition to:

- **Digital ATIS (D-ATIS)** for the airports within 25 nm of the route and 50 nm of departure and destination airports.

- **Dynamic Winds** for the area around the route. Dynamic Wind data is broken into rectangular sections that are hundreds of miles across. Pack downloads the Winds (Temps) and Winds (Speeds) map layers for the sections the route intersects.

- **3D Imagery** for the areas approximately 25 nm from the airports that are in the planned route. Packed 3D Imagery can be viewed using the 3D Route Preview feature or by tapping the **3D View** button from the route's airport view.

**Packed Data - Profile View**

Packed Icing, Turbulence, and Cloud data can be viewed in the Profile view with a Performance-tier plan. Profile View displays the appropriate forecast data for the flight's estimated time en route.

![Packed Turbulence Data in Profile View](image-url)
9. FLIGHT PLANNING

9.7.3 Packed Charts and Terminal Information

Using Pack to download charts is not recommended as it increases the amount of time required to Pack. Pilots should configure their download selections for the regions they normally operate in. See Downloads for additional information.

Pack evaluates the planned route for the missing downloads to include:

- VFR and IFR en route charts.
- Terminal Procedures (Airport Diagrams, and Departure, Arrival, and Approach Procedures).

If a route is missing downloads, Pack downloads the data according to the logic below.

**Terminal Procedures and Airport Information**

When planning in the United States or Canada, Pack downloads Terminal Procedures and Airport Information for the entire state or province if it is within 25 nm of the route or 50 nm of the destination or departure airport.

When planning in Europe, Pack only downloads Terminal Procedures and Airport Information for the countries the route intersects.

**Charts**

Pack downloads all selected chart types if the route intersects the chart and it is not already downloaded. Charts and plates downloaded using Pack are only valid for the current data cycle and will not automatically update.

Charts are only downloaded with Pack if the chart type is selected. For example, if a route intersects California, Pack will only download the U.S. IFR (High) P-1 chart for California if IFR High Charts is enabled in More > Downloads > Data Settings. If a chart type is not selected in Data Settings, Pack will not download it.
9. FLIGHT PLANNING

9.7.4 Accessing Packed Data
Packed data is not accessed from a different location than internet, ADS-B, or XM data. For example, to access charts that are downloaded with Pack, select a VFR or IFR chart from the Maps layer drop-down menu. If the chart was downloaded with Pack, it will appear the same as if it were downloaded as part of your download selections.

To access packed weather and NOTAM data, select the appropriate map layer (e.g., Flight Category) or Airport weather view (while offline).

NOTE: You can verify that data will be available offline by packing for a flight, disconnecting from the internet, ADS-B, and XM, and then viewing weather, NOTAMs, plates, and charts.

9.7.5 Deleting Packed Data
Weather, NOTAM, and fuel data downloaded with Pack is automatically removed when the information becomes obsolete or new information becomes available via the internet, ADS-B, or XM. In other words, once your device connects to the internet after your flight, the packed data is automatically deleted.

If your device does not connect to the internet, ADS-B, or XM for an extended period of time, refer to the table below to determine when data becomes obsolete and thus removed from the device.

<table>
<thead>
<tr>
<th>Packed Data Type</th>
<th>Time to Obsolete</th>
</tr>
</thead>
<tbody>
<tr>
<td>METAR</td>
<td>3 Hours</td>
</tr>
<tr>
<td>Winds Aloft</td>
<td>12 Hours</td>
</tr>
<tr>
<td>Dynamic Winds</td>
<td>Up to 28 Hours</td>
</tr>
<tr>
<td>TFR</td>
<td>14 Days</td>
</tr>
<tr>
<td>Fuel Price</td>
<td>1 Month</td>
</tr>
<tr>
<td>Airport NOTAMs</td>
<td>4 Days</td>
</tr>
</tbody>
</table>

Deleting Packed Charts and Plates
Packed charts appear in the Downloads view under the Packed and Unselected Regions. You can manually delete these charts at anytime by swiping from right to left on the download. To delete packed charts and plates after they expire, tap More > Downloads > Delete > Delete Expired.
AIRPORTS

The *Airports* view displays airport information, frequencies, airport thumbnail diagrams, taxi diagrams, terminal procedures, service provider details, fuel prices and terminal area weather for over 20,000 airports worldwide.

Buttons located in the upper toolbar help you find airports near the current airport, find airports near your current position, display the airport’s location in the *Maps* view, and add or remove an airport to your *Favorites* list.
10. AIRPORTS

10.1 Design

The Airports view is divided into two sections. The top half displays the latest weather, field elevation, pattern altitude (estimated or verified in the USA & Canada, verified only in Europe), automated weather frequencies, and controller frequencies. For airports in Europe, the Transition altitude (from VFR to IFR) is shown next to the position, altitude, and sunrise/sunset information.

Additional information is displayed in the bottom half of the screen by selecting one of the five tabs. The tabs are “Info” including airport related frequencies, the Airport/Facility Directory entry, and supplemental airport information; “Weather” including current and forecast weather; “Runway” including runway details including crosswind component; “Procedure” including Airport diagrams, SIDs/STARs, and terminal procedures; and “NOTAM” containing Airport, TFR/ARTCC, and Obstacle NOTAMs.

10.2 Finding an Airport using Search

Find airports by entering a search term in the search box, then tapping the ‘Search’ button displayed on the iPad’s on-screen keyboard.

Valid search strings include Federal Aviation Administration airport identifiers (three-letter identifiers), International Civil Aviation Organization identifiers (four-letter identifiers), city name, or keyword. If ForeFlight doesn’t find an instant match for the search term used, a list of close matches will appear.

Example Searches:

- **KJFK** - immediately displays airport information for Kennedy Int’l.
- **CDG** - immediately displays airport information for Charles De Gaulle.
- **Kennedy** - produces a list of all airports with “kennedy” in the airport or city name.
- **N35388** - returns aircraft information for the tail number N35388, including a link to FlightAware.com to track that aircraft’s flights.
- **KXIH** - shows the METAR and related info for the KXIH weather station.
10. AIRPORTS

10.3 Favorites/Recents/Browse

In portrait orientation the button in the top-left corner of the Airports view opens a sidebar containing three lists of airports: Favorites, Recents, and Browse. When in landscape orientation, the sidebar is automatically displayed on the left side of the screen.

In portrait orientation, view the Favorites list by tapping the Favorites/Recents/Browse button, or by swiping from the left side of the screen. Hide the Favorites sidebar by tapping the “Close” button, or tapping anywhere outside the Favorites sidebar.

10.3.1 Finding an Airport Using Browse

The Browse tab on the Airports view side-bar allows browsing airport listings by country and region. Search is the preferred method for locating airports, but Browse is a helpful option for locating an airport using the same State/City hierarchy you may already be familiar with from using Airport/Facilities Directories.

Tap the Favorites/Recents button and tap Browse to display the Airports List. Use the ‘A - Z scroller’ on the right hand side of the Airports List to move forward and backwards quickly through the list. Tap the Global tab at the bottom of the airports list to view airports outside of the United States.

10.3.2 Favorite Airports List

Use the Favorites list to store frequently visited airports, area airports, and airports for upcoming flights.

While viewing an airport, tap the single star button on the Airport view menu bar to add the airport to your Favorites list. Tap the button a second time to remove the airport from your Favorites list.

While the Favorites list is visible, tap any airport listed to display that airport’s full information.
10. AIRPORTS

Tap the Edit button in the top-right corner of the Favorites list to reorder or remove airports. Reorder an airport by touch-holding on the stacked lines to the right of the airport, then sliding it up or down in the list. Remove an airport by tapping the red circle to the left of the airport and tapping the Delete button that appears. Tap Done to exit Edit mode.

Airports can also be deleted outside of Edit mode by swiping left across the airport to reveal the Delete button.

Each airport in the Favorites list displays the most recent weather information for the airport (if available).

Information displayed includes the current flight rule, observation age, wind speed and direction, ceiling, barometric pressure, temperature, and dew point. Weather warnings (e.g., fog, thunderstorms, cumulonimbus clouds, lightning, mist) - are displayed and highlighted in red when present. ForeFlight Mobile automatically checks for updated weather observations every minute. If a more current observation is available, it is downloaded immediately and the display is updated.

ForeFlight uses the following convention for conveying the airport’s current Flight Category:

- Green VFR
- Blue MVFR
- Red IFR
- Magenta LIFR
10. AIRPORTS

10.3.3 Recent Airports List

Tap the Recents tab to display a list of airports you’ve viewed in reverse-chronological order.

To remove airports from the Recents list, there are two methods available: clear and swipe-to-delete. Tap the Clear button to remove all airports from the list. To remove a single entry from the Recents list use the standard Apple ‘swipe-to-delete’ function: swipe your finger across the airport, then tap the red “Delete” button.

Favorite and Recent Airport Sync

Changes to your Favorite and Recent airports, including adding, removing and changing the order of Airports, are automatically synchronized to each device that is signed-in to your ForeFlight Mobile account.
10. AIRPORTS

10.4 Airport 3D View

Airport 3D View provides a dynamic 3-dimensional preview of the airport environment combining high-resolution terrain data and aerial imagery to help you familiarize yourself with the airport environment before arrival. Airport 3D View is included in Performance Plus, Business Performance, and MFB Performance subscription plans.

Selectable runway buttons in the upper-right allow you to visualize straight-in approaches by automatically positioning the camera 1nm from the runway threshold along the published glideslope (or at an inclination of 6° if no glideslope information is available).

Tap the Layer button in the lower-left to toggle display of Internet Traffic as well as Obstacles, and tap a target to highlight it and track its position. Tap the Day/Night buttons in the lower-right to switch between Day and Night view. The Night view dims the surrounding terrain and display realistic runway lights.
10. AIRPORTS

Runway edge lighting is supported for most paved airports around the world, while larger airports may also display touchdown zone lights, PAPI lights, displaced threshold lights with approach light system if available, centerline lights, end light flashers, and more.

Use a single finger to pan the view around and the 2-finger “pinch to zoom” to zoom the view out up to 15 nautical miles from the airport. A data readout in the upper-left corner of the view provides information about the runway and current camera elevation, and the distance and angle of the camera from the end of the selected runway.

When Airport METAR data is available a windsock icon appears over the selected runway icon in the lower-left. In the examples above, the icon indicates a headwind with right crosswind.

The Airport 3D View uses high-resolution Aerial imagery, which is cached in memory the first time you view it for a particular airport. Use Pack before the flight to save the 3D View Aerial Imagery for all of the airports currently added to your route.

The app caches the 3D Aerial imagery for up to 20-25 airports, so the Airport 3D View for a previously-viewed (or Packed) airport may still be available while offline (eg: in-flight) even if that airport was not in the most recently-Packed route. However once the cache fills-up, the data for airport(s) that has been in the cache the longest will be cleared-out to make room for the new.
10. AIRPORTS

10.5 Airport Frequencies

Airport Frequencies are shown in the “Info” tab, broken-down by categories such as Approach, Center, Clearance, Common, etc...

For airports in the US, in support of the FAA’s Clearance Relay Initiative, ForeFlight now shows the phone number and facility name for a pilot to call to obtain an IFR clearance directly from the appropriate overlying Air Route Traffic Control Center (ARTCC) or approach control facility.

When using ForeFlight Mobile on an iPhone, tap on the number to initiate a phone call to that facility.

On the iPhone, and when using the iPad in Split Screen, the categories such as “Approach”, “Center”, etc... are listed different sections in the scrolling area, and the upper area of the Airports page smoothly moves into and out of view as you scroll.

Performance Plus and Business Performance customers, larger US airports where electronic Pre-Departure Clearances (PDC) are available for IFR flights are noted with the “PDC” badge next to the Clearance frequency.
10. AIRPORTS

10.6 Airport Weather

Current Flight Category and a summary of weather (METAR) are shown for each airport on the Favorite Airports list. Tap the “Weather” tab to view detailed weather data for the selected airport, including METAR, TAFs (with Forecast Discussion), Model Output Statistics (MOS) forecasts, Daily/Hourly forecasts, and Winds and Temperatures aloft with calculated difference from ISA (International Standard Atmosphere). Scroll down to see future forecasted TAFs and Winds Aloft.

The forecast Temperatures Aloft at different altitudes are colored based on temperature range:

- **Grey** Above +2° C
- **Magenta** From +2° C down to -25° C
- **Tan** Below -26° C
10. AIRPORTS

10.6.1 Digital ATIS (D-ATIS)

For Performance Plus and Business Performance customers, the latest D-ATIS is shown on the Airport Weather view and on the Maps view when viewing the Airport popup. D-ATIS requires an active Internet connection (Wi-Fi or Cellular Data).

William P Hobby Airport - Digital ATIS
10. AIRPORTS

10.6.2 Daily Weather Forecasts

The Daily/Hourly Weather Forecasts are an all-purpose 10-day, hourly computer-generated forecast powered by data from The Weather Company. The forecasts are available for both airports and for other locations when the device is connected to the Internet. Daily Weather forecasts are included in all subscription plans except for the discontinued “Legacy Basic” and “Legacy Pro” plans for individuals.

For airports, access them on the Airports > Weather > Daily tab, or on the Airports pop-ups on the Maps page or Flights views. Forecasts for airports in the route are included in Pack and are available for up to 24 hours after being downloaded.

For any arbitrary location on the Maps page, touch-hold on the location then tap the “Wx” button in the upper-right.

Quickly access a forecast for your current location by tap-holding the ForeFlight icon on your device’s home screen then tapping Local Forecast, or from the Airports page by tapping the Nearest (cross-hair) button in the upper-right and tapping the “Local Wx” button.
Daily Weather Forecast (continued)

Tap the Day you’d like to see the hourly detail, including estimates of temperature, surface wind speed and direction (Magnetic), barometric pressure, dewpoint and humidity, density altitude, chance of rain and forecast quantity of precipitation (for that hour), ceiling, visibility, sunrise and sunset times, and color-coded flight category.

The detail view that opens includes summary data at the top, including Flight Category, and the age of the forecast data. When the device is connected to the Internet, forecast data is automatically refreshed after 1 hour. The middle & lower detail sections are tappable & scrollable horizontally to show daily & hourly detail.

The bottom of the daily weather depicts the forecasted flight category, with Green = VFR, Blue = MVFR, Red = IFR, and Magenta = LIFR.

When looking at the hourly detail note that the forecast element(s) responsible for the flight category forecast are also colored that color.

For example in this KTXK daily detail, from 04:00-07:00 the forecast flight category is LIFR (magenta) due to forecast 200’ ceiling (also shown in magenta). From 07:00-08:00 the forecast flight category is MVFR (blue) due to the forecast of 3sm visibility, which is shown in blue. Note the sunrise icon and time (07:16) is shown in that hour. At 09:00 the forecast flight category is IFR (red) due to the forecast 700’ ceiling (also highlighted in red), and 0.1” of rain is forecast during that hour. At 11:00 the forecast flight category is VFR (green).
10.7  Model Output Statistics (MOS) Forecasts

Model Output Statistics (MOS) forecasts are derived from the output of numerical weather prediction models. An automated process developed by research meteorologists at NOAA, MOS takes the "raw" model forecast and uses a statistical approach to produce an objective site-specific forecast. For most stations, MOS forecasts are updated hourly for the first 24 hours, then updated every six hours from 25 hours to 3 days in the future. The new forecast is ordinarily available at 30 minutes past the hour.

IMPORTANT: MOS should ONLY be used as a supplemental product for enhanced situational awareness and is not meant as a substitute for official NWS forecasts.

While TAFs provide the official forecast for over 660 civilian airports throughout the US and its territories, MOS provides weather guidance for over 2000 airports including some military air bases.

MOS builds on the original forecast model by taking into account an historical record of observations at forecast points (such as airports), removes any known systematic model biases, and quantifies any uncertainty (like precipitation or thunderstorm chances) into probabilistic forecasts.
MOS also transforms the model data into sensible weather elements basic to aviation such as sky cover, ceiling height, visibility, wind speed and direction (True), the probability of precipitation, and the precipitation type. Unlike TAFs, MOS forecasts also include temperature and dewpoint when available, which can be expressed as either single values or a range of values, indicating that the value is expected to vary over the forecast period.

MOS is a point forecast similar to a TAF. That is, MOS is valid at the station (airport) and should not be used as zone or area forecast. Pilots should use MOS in a similar way they may use a TAF, keeping in mind that TAFs are constructed by highly trained meteorologists and will ordinarily be more accurate than a MOS forecast for the same airport. Although MOS cannot be used as a forecast for dispatch to the airport or for IFR alternate requirements as required by FAA regulations (use TAFs and the area forecast (FA) for this purpose) they are useful for getting a picture of likely weather at airports without a TAF, and for getting a more recently updated forecast for airports that do have a TAF, since MOS are updated hourly.

The use of "Nearest MOS" is provided strictly for convenience. Keep in mind that a MOS forecast for an airport that is 20 miles away, for example, may not be representative of the forecast for the intended airport.

Despite its advantages, the MOS has some important limitations vs. TAFs:

- MOS is only available for US airports and some airports in US territories.
- MOS forecasts are never amended.
- MOS does not predict temporary conditions.
- MOS cannot forecast multiple cloud layers.
- MOS does not predict specific cloud layers above 12,000’ AGL.
- MOS cannot forecast precipitation intensity and cannot distinguish between rain and drizzle.
- MOS cannot distinguish between freezing rain, freezing drizzle and ice pellets. so if any is present, it just says “Freezing Precipitation.”
- MOS cannot predict variable winds.
- MOS cannot forecast non-convective low level wind shear (LLWS) or no significant weather (NSW).
10. AIRPORTS

10.7.1 Runway Winds

Tap on the Runways tab to view the preferred runway based winds reported in the last METAR received by ForeFlight Mobile. Headwinds are indicated by a green arrow and tailwinds by a red arrow, and the magnitude and direction of the crosswind are shown next to the grey arrow.

The > to the right of the runway wind summary points to the additional information about each runway.

Remember that Runway heading is listed in Magnetic, while Wind direction is True. ForeFlight automatically applies the current Magnetic Variation when calculating the wind components. You can see the Magnetic Variation on the Airports page “Info” tab by scrolling down to the Features section.

In this example, the most recently received METAR for KSTP reports the winds are from 170° at 12 knots (38 minutes ago). This means that the wind on Runway 14 is a 11 knot headwind (green arrow) with a 5 knot crosswind (grey arrow) from the right.

Tap on each runway entry to see additional information about the runway, such as glideslope indicator, displaced threshold, and actual magnetic heading.

10.8 Procedures

Terminal Procedures include Standard Terminal Arrival Routes (STARs), Standard Instrument Departures (SIDs), and approach plates. These are all accessible from the Airports view. Use the search or browse methods of finding an airport, then tap the Procedure tab located on the segmented menu bar towards the top of the Airports view.

Depending on the procedures available for an airport, several types of procedures may be displayed according to type, such Arrival, Departure, and Approach. Departures and Arrivals (SIDs/STARs) that have aircraft type restrictions (eg: restricted to Piston, Turboprop, and/or Jet) are tagged in the list.

Procedures are marked as Saved or Not Saved. Procedures marked Saved (in green) are stored locally on your iPad and are available when offline. Procedures marked Not Saved are NOT stored on your iPad and must be downloaded by viewing them or by using the Downloads view to download that region’s terminal procedures in bulk.
From the **Procedures** tab, touch a procedure’s name to display the ForeFlight procedure viewer. The procedure viewer includes buttons for: accessing a list of recently viewed procedures, sending a plate to the Map (if you have a Pro Plus or Performance Plus subscription) printing a procedure, adding a procedure to your current Plates binder, and locking the procedure.

ForeFlight Mobile’s **Lock** button disables touch interaction (zooming and scrolling) with the terminal procedure viewer, which minimizes the risk of accidental closure when in turbulence. The lock button can also, optionally, disable all buttons on the screen, including those that change views. That feature is configured in More > Settings.

Multi-page procedures can be viewed by sliding pages left or right with a single finger.

Tap the **Rotate** button in the upper toolbar to rotate the plate clockwise 90 degrees per tap.
10. AIRPORTS

10.8.1 European Airport Information

Beginning with ForeFlight Mobile version 12.3, additional Jeppesen-sourced information about many European airports (similar to what was previously available in Jeppesen Mobile FliteDeck VFR) is now available as “AIRPORT INFO” under Airports > Procedures, in the ForeFlight category.

This information includes airport-specific notes for ground movement, general aviation access, VFR and helicopter procedures, and more. The documents are included when the “Aerodrome Charts & AIP” download option is selected ON.
10. AIRPORTS

10.8.2 Swipe to Change Plates

When viewing a plate from the Airports page or the Plates page (including in a binder) you can quickly change between plates by **swiping three fingers** from Right to Left (or Left to Right).

When viewing plates at an Airport, swiping from Right to Left with three fingers will display the next Procedure in that airport’s list and swiping from Left to Right will display the previous Procedure in that airport’s list.

When viewing plates in a binder on the Plates page, swiping from Right to Left with three fingers will display the next Procedure in the binder and swiping from Left to Right will display the previous Procedure in the binder.

In either case the lists do not “wrap around” so when you get to the end of the list, additional swipes in the same direction will not take you to the end (or beginning) of the list or binder.

**IMPORTANT:** The “Zoom” Accessibility option (in Apple Settings, General, Accessibility) must be OFF for plate swiping to work. If the “Zoom” Accessibility feature is ON, swiping with three fingers will not change between plates.

**NOTE:** Displaying the Instrument Panel and aircraft position on a Plate requires a ForeFlight Pro, Pro Plus or Performance Plus subscription. Basic Plus subscriptions do not show the Instrument Panel on the Plates page.

10.8.3 Using Geo-Referenced Procedures

Geo-referencing is an optional feature that requires a Pro Plus or Performance Plus subscription. Go to [www.foreflight.com/buy](http://www.foreflight.com/buy) or the Accounts view to learn how to purchase or upgrade your subscription.

Most instrument procedures can be geo-referenced. This allows ForeFlight Mobile to display the aircraft’s position on the procedure.

Typically, only approach plates and taxi diagrams are geo-referenced; most STARs/DPs are not drawn to scale and so cannot be geo-referenced. However some STARs/DPs produced by Jeppesesen can be georeferenced, and displayed on the Maps page. And using the “Procedure” button on the Flight Plan Editor you can add the points on the SID/STAR to your route.
When a geo-referenced procedure is displayed, a blue square is drawn around the geo-referenced area. This is the only area of the plate in which your aircraft will be shown. Note that some plates are only drawn to-scale in the center portion - if your aircraft’s location is shown outside that area it is positioned based on the scale of the center area and must only be compared to elements within that center area.

Until GPS data senses movement and provides a track over the ground, position is indicated using a small blue dot. Once your aircraft starts moving, the aircraft icon selected in ForeFlight Mobile settings is shown. Much like the Maps view, the aircraft speed, track, etc. is displayed at the bottom of the view. Single-tap on the Plate to hide/show the instruments at the bottom. The order and layout of the instruments is the same as on the Maps page. Tap an instrument to change it.
10. AIRPORTS

10.9 Airport NOTAMs

Tap the NOTAM tab to view all the NOTAMs that have been issued for that airport. ForeFlight divides NOTAMs according to their type, with sub-tabs for Airport, Obstacle, TFR, and ARTCC NOTAMs. If you’ve purchased or linked Jeppesen chart coverages in ForeFlight, a Jeppesen tab is also available with NOTAMs for that airport issued by Jeppesen.

If any runway or airport closure NOTAMs are in effect for an airport, ForeFlight will display a prominent banner across the top of the Airports view. Tap the NOTAM banner to directly view the NOTAMs.

For runway closure NOTAMs, the banner includes the name of the closed runway, and a red Closed label is also added on the Runways tab. Tap the closed runway to see the relevant NOTAM.

![Airports - Runway Closure NOTAM](image-url)
10. AIRPORTS

10.10 FBO Information

To access a list of Fixed Based Operators providing pilot services at an airport, tap the **FBOs** button. FBO details displayed include hours of operation, fuel prices, location on field, fuel availability, comments, contact numbers and frequencies, and any additional services provided. ForeFlight includes FBO details for thousands of airports worldwide.

The location of FBOs that sell fuel can also be shown directly on the Airport Diagram. FBO information can also be accessed on the Maps page by tapping on an airport icon, then tapping the FBOs button. When you tap on an FBO’s entry, the popup shows details of that FBO including Information (including the table of fuel prices, contact information, website, and address), Fees, Photos, and pilot-submitted Comments.

10.10.1 Comments

User-provided comments are available for FBOs and airports. View FBO comments by tapping the Comments tab just above the fuel price information. Once you access comments, they are saved to your device so you’ll be able to view them again later - even when you are offline.

To add a comment, tap the “Add Comment” button. Comments are moderated by ForeFlight and will appear for all users to see after they are reviewed.
10. AIRPORTS

10.10.2 Fuel prices

Fuel price data is provided for thousands of FBOs. This price data is not guaranteed so it is important to verify the price information with the FBO when complete accuracy is required. The price data does not differentiate between cash or credit pricing, nor will it reflect any discounts that may be available.

Tap Update Fuel Prices when viewing an FBO’s details to submit updated fuel prices for Jet A, 100LL, and UL94. It is not possible to update Mogas fuel prices.

When submitting price data, leave unknown prices blank. Blank values will be ignored when the prices are updated on the ForeFlight system.

![Update Fuel Prices dialog](image)

Submitted prices are reviewed by ForeFlight. Accurate submissions create happiness.
10. AIRPORTS

10.11 A/FD CFS and AIP

For additional airport information like pilot-controlled lighting procedures, parachute jumping activities, etc., sometimes there’s just no better place than the Airport/Facility Directory, Canada Flight Supplement (for Canadian airports) or Aeronautical Information Publication (for European and other airports around the world).

Each airport’s A/FD entry is accessible from the Airports > Info tab, under A/FD (or CFS, or AIP) category: scroll down tap the entry to open it on the Plates page.

If the entry has multiple pages you can single-finger swipe to the left or right to change pages. A single-tap on the A/FD page will display the "1 of n" at the bottom of the page, where n is the number of pages relating to that airport.
10. AIRPORTS

10.12 Airport and Aircraft Flight Tracking

Flight tracking data is provided by FlightAware.com and is available only while connected to the Internet. On the Airports page, tap on the Info tab then scroll down to the Flight Tracking category.

Tap Scheduled Arrivals, Scheduled Departures or Enroute to open Safari and show a list of aircraft scheduled to arrive or depart, or that are enroute to the airport. If your iPad is in Split Screen view with Safari displayed, the FlightAware website will open there.

NOTE: To track an individual aircraft, type an aircraft Tail-number in the Search box, then tap the “Track” button in the aircraft registration information popup.
MAPS

The Maps view is used for planning flights. In-flight, the Maps view is used as an aid to situational awareness. The Maps view can display airspace, weather, terrain, traffic, aeronautical information, aeronautical charts, terminal procedures, planned routes, custom content, and more.

11.1 Design

Access the Maps view by tapping Maps in the navigation toolbar at the bottom of the screen. Buttons in the upper toolbar control what’s displayed on the map.

Aeronautical information is displayed in a collapsable sidebar on the right side of the screen. Filters on the left side of the screen allow features to be toggled on and off.
11. MAPS

11.1.1 Upper Toolbar

The upper toolbar contains a drop-down layer selector and buttons for toggling different features. From left to right, the upper toolbar consists of:

- **Map Layer Menu** - Displays a drop-down map layer selector. The items selected in the drop-down menu are displayed on the main map view. The map layer menu contains charts, maps, weather layers, aeronautical information, and custom content. When map layers are enabled, the names of the selected layers are displayed in the map layer menu button.

- **FPL Button** - Toggles the Flight Plan (FPL) menu. The flight plan menu is used for planning routes, displaying the Navlog, and activating Profile View.

- **Map Settings** - Toggles the Map Settings menu. Maps settings are used to customize the look of the map.

- **Attitude Indicator** - Toggles the Attitude Indicator. The attitude indicator displays GPS track, altitude, ground speed, climb or descent rate, and pitch and bank if connected to an external device with an attitude (AHRS) sensor.

- **Instrument Panel** - Toggles the Instrument Panel on and off. The instrument panel is located at the bottom of the Maps view. The instrument panel displays user-selected flight details.

- **Favorite and Recent Routes** - Toggles the recent and favorite routes menu.

- **Search Bar** - Search bar for searching points of interest, aeronautical data, routes, and more.

- **Auto Center Button** - The auto-center (crosshair) button centers the map on the aircraft’s location. When auto-center is activated, the button is highlighted.
11. MAPS

11.1.2 Flight Plan Menu

The Flight Plan Menu contains three views. The views are accessed with buttons located near the bottom right corner of the FPL menu. To access the views, tap the FPL button in the upper toolbar to display the menu. See the Flight Plan Menu section for additional information.

- **Edit** - Displays the Flight Plan Editor.
- **NavLog** - Displays the navlog for the planned route.
- **Profile** - Displays the Profile View (Pro Plus subscription or higher required).

**Flight Plan Editor**

<table>
<thead>
<tr>
<th>FROM</th>
<th>TO</th>
<th>HDG</th>
<th>TOTALS</th>
<th>LEG</th>
<th>REMAINING</th>
<th>ETA</th>
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</thead>
<tbody>
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<td>BXK</td>
<td>250°</td>
<td>41 nm</td>
<td>5.6 g</td>
<td>1h28m</td>
<td></td>
</tr>
<tr>
<td>BXK</td>
<td>CURIV</td>
<td>264°</td>
<td>129 nm</td>
<td>11.0 g</td>
<td>1h10m</td>
<td></td>
</tr>
<tr>
<td>CURIV</td>
<td>DECAS</td>
<td>260°</td>
<td>175 nm</td>
<td>13.9 g</td>
<td>1h33m</td>
<td></td>
</tr>
</tbody>
</table>

**NavLog**

![NavLog Diagram]

**Profile View**

![Profile View Diagram]
11. MAPS

11.1.3 Maps Sidebar

The sidebar appears with a single map element tap or when the map is tapped and held. The sidebar remains open until a blank area of the map or the Close button is tapped.

When a map element is tapped (airport, waypoint, navaid) a green marker highlights the selected element. When a geographic element such as airspace is tapped and held, the airspace is highlighted in green. See the Sidebar section for more information.

Maps Sidebar (Special Use Airspace)
11. MAPS

11.1.4  Main Map View

The main map view displays the layers selected in the map layer drop-down menu. When no map layers are selected, the base map is displayed. Base map appearance can be adjusted by tapping the map setting (gear button) and changing the options in the ForeFlight Map section.

The map view does not resize as the FPL menu, sidebar, instrument panel, or layer selector menus are toggled. The map automatically resizes when the attitude indicator is toggled on and off.

Pinch, Zoom, and Pan

The map supports the standard iPad gestures for zooming and panning. Drag your finger on the map to slide it to a new region. Use two fingers in a pinch or expand motion to change the zoom scale of the map. You can also double-tap the map to zoom in one level or tap once with two fingers simultaneously to zoom out one level. Anytime you display a new route on the map, the zoom level and region shown will auto-adjust to bring your route into view. Tap the Zoom to Route button in the lower left of the Maps screen to automatically zoom the map in or out to show the entire Route.
11. MAPS

**Map Layer Menu**

Various map layers are selectable from the map layer menu. Available layers are determined by your subscription, region, and download selections. If a feature is not included in your subscription or if it is not selected for download, it is hidden in the drop-down menu.

Map layers are grouped with thin horizontal lines. Charts and weather layers can only display one active layer at a time. Selecting a map layer in a group with an already active layer may result in automatically deseleting the active layer. For example, selecting the satellite layer automatically deselects radar if the radar layer is enabled.

The map layer menu is dismissed each time a map layer is selected. To make multiple selections without dismissing the map layer menu, enable **Multiple Selections** in the **Map Settings** menu.
11. MAPS

When downloading ForeFlight Mobile for the first time, a low-resolution base map is automatically downloaded and available offline. The base map includes basic geographic features and is displayed when no other layers are selected. All charts and map layers are overlaid on the base map.

11.2 High-Resolution Base Map

The high-resolution base map depicts ground features and cultural elements in much greater detail than the default base map. The high-resolution base map includes higher-resolution roads and railroads, detailed coastlines, terrain peak markers with associated altitudes, mountain peaks, mountain passes, and highway labels. Individual base map elements can be toggled on and off in Map Settings > Cultural Elements.

The high-resolution base map is not automatically displayed. Select and download the high-resolution base map by selecting More > Downloads > Data Settings and selecting the data for the region where you fly. When high-resolution data is downloaded, it is automatically displayed when no other charts are chosen.

High-Resolution Base Map and Terrain
11. MAPS

11.3 Aeronautical Map

ForeFlight's Global Aeronautical Map dynamically displays Jeppesen-sourced digital aeronautical data. The aeronautical map constantly updates to display the most relevant information as you pan and zoom. Enable the Aeronautical map from the map layer menu.

Individual aeronautical elements can be displayed or hidden. See Map Settings for additional information. The Aeronautical map must be enabled to adjust the settings.

Updates to the Aeronautical map are made available every 28 days (or sooner) as part of the Airport and Nav Database. The Aeronautical map is automatically overlaid on all other maps and charts.
11.3.1 Aeronautical Map Features

The Aeronautical Map includes the following features.

- **Continuous Zoom** - Icons, shapes, and text labels smoothly fade in and out as the zoom level changes, in contrast to traditional (raster) charts which have to re-render at certain zoom levels to maintain their clarity.

- **Decluttering** - The information shown on the map changes along with the zoom level, with large-scale features like ARTCC boundaries and major airports appearing when zoomed out and small-scale features like waypoints, VORs, and smaller airports appearing as you zoom in. This prevents the map from cluttering and ensures that the most relevant information at any zoom level is shown.

- **Automatic Airspace Highlighting** - Automatically highlights airspace within an altitude of +/- 1,000' and a 1-nautical mile corridor of your planned route, and dims all other airspaces to reduce clutter. When determining which airspace to highlight, your aircraft’s climb, cruise, and descent trajectory is considered. In-flight, airspace ahead of your current track is highlighted. Automatic airspace highlight settings are available in [Map Settings > Airspace](#).  

- **Always-Up Labels** - Labels for airports, waypoints, and other map features always appear in the proper orientation, even when the rest of the map is upside down, as when flying south in Track Up mode.

- **Customizable Data** - The data shown on the map can be customized to the type of planning or flying you’re doing. Airspaces can be turned on or off, airways can be set to high or low IFR, and ARTCC borders, heliports, and private airports can be toggled on or off. See [Map Settings](#) for more information.

- **Adjustable Text Size** - The text size of labels for every map element can be adjusted using a slider. See [Map Settings](#) for more information.

- **Single Tap** - When the Aeronautical layer is enabled, single tap a map element to open the sidebar and display information about the element.

- **Embedded Airport Diagrams** - ForeFlight airport diagrams are directly integrated with the Aeronautical Map. Airport diagrams automatically fade in and out with zoom. Embedded airport diagrams include runways, taxiways, hold pads, and FBO labels.
11. MAPS

11.3.2 Aeronautical Map Quick Filters

A column of toggle buttons enables and disables Aeronautical Map features. The buttons *only* show when the Aeronautical Map layer is selected and the Quick Filters setting is enabled. Tap a quick filter button to show/hide the feature.

**Aeronautical quick filters:**

- Airports
- Airspace
- Waypoints
- NavAids
- Airways (Low or High, as selected in Maps Settings)
- FIR/UIR selection (Low or High, as selected in Maps Settings)
- Terrain (Colored or Shaded, as selected in Maps Settings)
- Roads/Railroads

**Controlling Aeronautical Map features without Quick Filters**

When the Quick Filters are disabled or unavailable due to a lack of available screen space, tap the Maps Settings (gear) button and scroll down to the Aeronautical section to select each of the Airports, Airspace, Airways & Waypoints, and ARTCC/FIRs ON or OFF. Terrain & Cultural Elements (Roads and Railroads) are found under the ForeFlight Map section.

To view Quick Filters on an iPhone, some features may need to be disabled for the Quick Filters buttons to show on the Maps Page. Depending on your iPhone version, you may need to turn off up to three features: Marked Positions, Track Log Start/Stop Control, and Map Annotations.

**NOTE:** Compass roses are only depicted if airways (high or low) intersects the navigational aid.
### Aeronautical Map Symbols

The following symbols are shown on the Aeronautical Map layer:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Civil Airports" /></td>
<td>Civil Airports with Services (with and without tower)</td>
</tr>
<tr>
<td><img src="image2" alt="Civil Airports" /></td>
<td>Civil Airports without Services (with and without tower)</td>
</tr>
<tr>
<td><img src="image3" alt="Military Airports" /></td>
<td>Military Airports (with and without tower)</td>
</tr>
<tr>
<td><img src="image4" alt="Private Airports" /></td>
<td>Private Airports (with and without tower)</td>
</tr>
<tr>
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<td>Seaplane Bases with Services (w/ and w/o tower)</td>
</tr>
<tr>
<td><img src="image6" alt="Seaplane Bases" /></td>
<td>Seaplane Bases without Services (w/ and w/o tower)</td>
</tr>
<tr>
<td><img src="image7" alt="Heliports" /></td>
<td>Heliports (light map color scheme)</td>
</tr>
<tr>
<td><img src="image8" alt="Heliports" /></td>
<td>Heliports (dark map color scheme)</td>
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## 11. MAPS

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</thead>
<tbody>
<tr>
<td>MATZ</td>
<td>TSA/TRA</td>
</tr>
<tr>
<td>Caution/Warning/Danger Airspace</td>
<td>Prohibited/Restricted Airspace</td>
</tr>
<tr>
<td>Other Airspace</td>
<td>Parachute Areas</td>
</tr>
<tr>
<td>VOR Airways/Jetways</td>
<td>RNAV Routes</td>
</tr>
<tr>
<td>FIS Boundary</td>
<td>ARTCC Sector Stamps</td>
</tr>
<tr>
<td>Global Airspace Altitude Labels</td>
<td>Helipad</td>
</tr>
</tbody>
</table>

**VFR (Europe only)**

<table>
<thead>
<tr>
<th>VFR Waypoint</th>
<th>VFR Waypoint (Compulsory)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VFR Helicopter Waypoint</td>
<td>VFR Helicopter Waypoint (Compulsory)</td>
</tr>
<tr>
<td>Landmarks</td>
<td>HIRTA (High Intensity Radio Transmission Area)</td>
</tr>
<tr>
<td>Low Point</td>
<td>Bird Refuge</td>
</tr>
<tr>
<td>Model Flights</td>
<td>VFR Arrival</td>
</tr>
<tr>
<td>VFR Departure</td>
<td>VFR Arrival &amp; Departure</td>
</tr>
<tr>
<td>VFR Flight Corridors</td>
<td>IFR Flight Corridors</td>
</tr>
<tr>
<td>Helicopter Procedure</td>
<td>VFR Transit Route</td>
</tr>
</tbody>
</table>
## 11. MAPS

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic Circuit (Non-standard aircraft)</td>
<td>Traffic Circuit</td>
<td>Directional Traffic Circuit (Non-standard aircraft)</td>
<td>Directional Traffic Circuit</td>
</tr>
<tr>
<td>Nature Area</td>
<td>No Overfly Area</td>
<td>Fuel</td>
<td>Parking</td>
</tr>
<tr>
<td>Tower</td>
<td>Cashier</td>
<td>Beacon</td>
<td>Tower (Lit)</td>
</tr>
<tr>
<td>Windsock</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
11.3.4 European Airspace

With a Europe subscription, the Aeronautical Map includes Jeppesen's European VFR navigation and airport data in addition to IFR data, supporting both VFR and IFR flying in Europe.

Data includes VFR Waypoints (Standard and Helicopter), VFR Procedures including Entries & Exits, Traffic Circuits, Holds, No Overfly Areas, Nature Areas, Bird Sanctuaries, and Model Flight Areas.

These examples show how the airspace is depicted at various levels of zoom, all the way from the Airport level showing the location of Parking, Fuel, and the Cashier, up to large areas of airspace, including FIR boundaries.
11.4 Charts

Charts are selected from the left column of the map layer drop-down menu. The charts column includes the Aeronautical Map, Street Map, Aerial Map, and all downloaded published and custom charts. This section describes each chart.

- **Street Map** - The global street map is made available over the internet from a third-party provider (OpenStreetMaps). The street map is dynamic and will show more detail as the map is zoomed in. The screen map can not be downloaded and is only available when connected to the Internet.

- **Aerial Map** - The global aerial map is satellite-based imagery with street data. The aerial map is provided by a third-party agency and can only be used when connected to the Internet. Due to the infrequency of satellite imaging, some imagery may be outdated.

- **U.S. VFR Sectional** - Terminal Area Charts (TACs) are automatically displayed when a VFR sectional is zoomed in to major cities containing a TAC inset.

- **U.S. IFR** - low or high IFR enroute charts from FAA.

- **Canada VNC** - VFR Terminal Area Charts (VTAs) are automatically displayed when a VNC is zoomed in to major cities containing a VTA inset.

- **Canada IFR** - low or high IFR enroute charts from NavCanada.

- **Europe VFR** - visual navigation charts from European national AIP providers (e.g., DFS for Germany), available as optional add-ons to the Europe region.

- **Europe IFR** - low or high IFR enroute charts via EUROCONTROL.

- **U.S. IFR (planning)** - IFR planning chart covering contiguous 48 states.

- **U.S. IFR (ocean)** - Atlantic and Pacific ocean IFR charts.

- **U.S. VFR (flyway)** - VFR planning charts (from the “back” of the TAC charts).

- **Carib/Mexico IFR** - IFR Low or High charts covering Mexico and the Caribbean. Tap More > Downloads > Region Settings > United States > Canada, Mexico, Central America.

- **U.S. Helicopter** - Three-color charts showing aeronautical information useful to helicopter pilots navigating nine major metro areas with heavy helicopter activity. Includes helicopter routes, heliports, navaids, and obstructions.
11. MAPS

- **Heli Gulf VFR** - U.S. VFR Sectional-style chart of the Gulf of Mexico (GOM) showing airspace, GOM blocks, airspace, and oil rig and weather station locations. Can be selected with any U.S. base map.

- **Heli Gulf IFR** - IFR style chart of the Gulf of Mexico (GOM) showing GOM blocks, GPS waypoints, airspace and weather station locations. Can be selected with any U.S. base map.

- **Custom Charts** - display a custom .mbtiles chart on the map. Multiple Custom charts can be imported and displayed at a time. See the Custom Content chapter for details about creating and importing files.
11. MAPS

11.5 Map Layers

Map layers are selected from the right column of the layer menu. The available layers are dependent upon your ForeFlight subscription, region, and external device connection. If a subscription, region, or connected external device does not include a product, it is hidden from the layer menu. For example, if you’re not connected to an external device that provides XM data, the XM weather layers are hidden.

**CAUTION:** When a cellular-capable iPad or iPhone is connected to an external device via Wi-Fi (e.g., Sentry), cellular data in ForeFlight Mobile is disabled. As a result, weather layers which require internet data (e.g., Radar Composite) can be selected, however they will not display updated data.
11.5.1 Map Layer Sections

The Map Layer menu is divided into multiple sections. Sections are defined by thin horizontal lines. Most sections only allow one map layer to be selected at a time.

Map layers can be selected at any time, however, they will only display updated information if the corresponding internet, ADS-B, or XM connection is available.

For example, when connected to a Sentry, the ADS-B layers can be selected, however, they will not display data until your device is receiving ADS-B data from a ground-based tower.

**CAUTION:** When connected to an external device via Wi-Fi (e.g., Sentry), cellular data in ForeFlight Mobile is disabled.

The remainder of this section provides descriptions of each map layer available in ForeFlight Mobile.
11. MAPS

11.5.1 Radar

Radar imagery is generated by ground-based stations that bounce (reflect) radar waves off precipitation. The radar waves reflect off of precipitation and create echoes. Echo reflectivity is measured in dBZ (decibels) and reveals the intensity of the precipitation. ForeFlight displays precipitation type and intensity using a graduated color scale.

To find precipitation, radar waves are broadcast into the sky at various tilt angles. The multiple angles produce two different types of radar products.

- **Composite Radar** displays the maximum echo reflectivity from all radar tilt angles. The Composite layers can reveal important storm structure features and the intensity trends of storms.

- **Lowest Tilt (Base)** displays the maximum echo reflectivity from only the lowest tilt angle. The Lowest Tilt (Base) radar layer reveals where precipitation is likely reaching the ground.
ForeFlight Mobile can display up to five unique radar layers. Each radar layer displays
the intensity, location, movement, and type of precipitation (with varying resolution).

<table>
<thead>
<tr>
<th>Radar (Composite)</th>
<th>Radar (Lowest Tilt)</th>
<th>Radar (ADS-B)</th>
<th>Radar (XM Comp)</th>
<th>Radar (XM Base)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source</td>
<td>Internet</td>
<td>Internet</td>
<td>ADS-B</td>
<td>Sirius XM</td>
</tr>
<tr>
<td>Resolution</td>
<td>High</td>
<td>High</td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>Type</td>
<td>Composite</td>
<td>Lowest Tilt</td>
<td>Composite</td>
<td>Composite</td>
</tr>
</tbody>
</table>

### Radar Map Layer Types

**Radar (Composite)**

The Radar (Composite) map layer displays high-resolution composite internet radar
data for much of the United States, southern Canada, northern Mexico, Australia, and
Europe. Radar (Composite) can be selected at any time but will only display updated
radar imagery with an active (Wi-Fi or cellular) internet connection.

Connecting to a Wi-Fi device that is not connected to the internet (e.g., Sentry)
prohibits this map layer from being updated. Composite radar is updated every five
minutes, with approximately 55 minutes of radar data being available for replay.

**Radar (Lowest Tilt)**

The Radar (Lowest Tilt) map layer is similar to the composite radar layer in that it is a
high-resolution internet-sourced radar layer. Radar (Lowest Tilt) differences include:

- Lowest Tilt radar is not available in Europe.
- Lowest Tilt radar only displays echoes from the radar station’s lowest (tilt) angle.
- Lowest Tilt radar is not broadcast over ADS-B.
11. MAPS

**Radar (ADS-B)**

The Radar (ADS-B) map layer can be selected when connected to an external ADS-B device. ADS-B radar automatically provides two types (CONUS and Regional) of low-resolution *composite* next-generation radar data (NEXRAD). ADS-B radar data is generally only available while airborne near the United States.

**CONUS and Regional NEXRAD**

ADS-B towers broadcast two types of radar data. Both types are automatically shown when the **Radar (ADS-B)** map layer is selected.

- **Regional** NEXRAD is broadcast by all FIS-B tower tiers and is higher resolution than CONUS radar with a faster refresh rate. Regional NEXRAD is automatically displayed for the area that is approximately 150 to 250 nm from your position.

- **CONUS** NEXRAD is a low-resolution (pixelated) radar layer that covers the Continental United States. ForeFlight receives updated CONUS NEXRAD every 5 minutes.

As you fly across the country with the Radar (ADS-B) map layer enabled, the radar echoes automatically change from CONUS to the higher resolution Regional NEXRAD as you get within 150 to 250 nm of the radar returns.
11. MAPS

**XM Radar**

The Radar (XM Comp) and Radar (XM Base) map layers are available for the United States, southern Canada, and northern Mexico when connected to a supported XM receiver (SXAR1 or GDL51/52).

XM composite and base radar provide a higher resolution radar picture than ADS-B, but lower resolution than internet radar. XM composite and base radar include storm track, hail, echo top, and mesocyclonic indicators.
11. MAPS

11.5.2 Satellite

Two satellite map layers are available when receiving data from the internet.

**Enhanced Satellite** - Visible- or infrared-derived (depending on the time of day) grayscale satellite with color infrared highlights for high-altitude cloud tops.

**Color IR Satellite** - Infrared satellite is colorized to depict the temperature of the cloud tops. Ground temperature depictions are masked out to show regions without clouds. Color-temperature scale is the same as used in the Infrared Satellite imagery. You can animate the satellite layers using the time slider. The satellite layers check for updates every three minutes, but new images are typically transmitted every 30 minutes. Satellite requires an active Internet connection or Baron Mobile Link weather receiver (IR Satellite is unavailable with Baron Mobile Link).
11. MAPS

11.5.3 Icing

Up to four Icing map layers are available in ForeFlight Mobile. Each map layer provides an altitude slider on the right side of the screen for viewing icing severity at different altitudes. When in flight, the Auto button at the top of the slider sets the selected altitude to your GPS altitude.

**Icing (US)** (requires a Pro Plus or higher subscription) is an internet-sourced map layer that displays icing severity forecasts (light, moderate, heavy) based on the Forecast Icing Product (FIP) run hourly and is extended 18 hours into the future. The Icing US layer covers the continental United States, northern Mexico, and southern Canada, generally between 16N and 59N Latitude.

**Icing (Global)** (requires a Pro Plus or higher subscription) is an internet-sourced map layer that displays icing severity forecasts (light, moderate, heavy) based on the Global Forecast System (GFS). The forecast is run four times per day and extends 24 hours into the future.

**Icing (XM)** (requires GDL 51 or GDL 52) displays icing severity levels (light, moderate, heavy), plus SLD threat. Covers CONUS plus northern Mexico and southern Canada generally between 16N and 59N.

**Icing (ADS-B)** (requires ADS-B receiver) is an NWS graphical forecast with a look ahead range of 150 nm to 250 nm. Forecast icing severity and anticipated presence of super-cooled large droplets (SLD) are provided for every 2,000 ft up to 24,000 ft MSL. This information comes from the NWS Forecast Icing Potential model, available only in the continental United States. Forecast icing information is unavailable for Alaska, Hawaii, Guam, or Puerto Rico. This model is run on an hourly basis. The transmission interval is every 15 minutes.
11.5.4 Turbulence

Up to four turbulence map layers are available in ForeFlight Mobile. Each map layer provides an altitude slider on the right side of the screen for viewing turbulence intensity at different altitudes. When in flight, the Auto button at the top of the slider sets the selected altitude to your GPS altitude.

Turbulence (US) (requires a Pro Plus or higher subscription) displays EDR (eddy dissipation rate) forecasts which translate into turbulence severity based on aircraft weight. The Turbulence US layer covers the continental United States, northern Mexico, and southern Canada, generally between 16N and 59N Latitude.

Turbulence (Global) (requires a Pro Plus or higher subscription) displays EDR (eddy dissipation rate) forecasts which translate into turbulence severity based on aircraft weight.

Turbulence (XM) (requires GDL 51 or GDL 52) displays turbulence intensity forecast based on a medium aircraft weight category. Covers the continental United States plus northern Mexico and southern Canada.

Turbulence (ADS-B) is an NWS forecast map layer with a look-ahead range of 150 nm to 250 nm. Turbulence (ADS-B) displays the forecast eddy dissipation rate (EDR) (i.e., turbulence intensity) based on a medium aircraft weight category.
11. MAPS

11.5.5 Clouds

Clouds - Displays a global view of forecast cloud coverage at a selectable altitude (using the altitude slider on the right) and time (using the time slider at the bottom). The forecast is based on the GFS Cloud Coverage product and depicts the forecast percentages of cloud cover using different shades of gray. The forecast data is included in Pack for offline use during the valid forecast period. The Clouds map layer is included in Pro Plus, Performance Plus, and Business Performance plans.

11.5.6 Surface Analysis

Sfc Analysis (XM) (requires GDL 51 or GDL 52) - Displays isobars, pressure readings, and other weather features associated with a surface analysis product. Covers almost all of North and Central America (excluding northernmost Canada and Alaska) and as far west as Hawaii.

Surface Analysis - Displays isobars, pressure readings, and other weather features associated with a surface analysis product. Use the time slider to view different frames in the forecast. Provides global isobar and pressure readings and more detailed weather features for North America. Requires a Pro Plus, Performance Plus, or Business Performance subscription.

11.5.7 Winds

Winds (Temps) - Displays forecast global temperatures in °C up to 24 hours in the future, as colors at a selectable altitude with wind direction and speed represented by smoothly-flowing particle animations. The layer features a dynamic legend at the bottom of the Maps page, showing the color range corresponding to the temperatures. The layer is included when packing for a flight. Included in Performance Plus and Business Performance.

Winds (Speeds) - Displays forecast global wind speeds in knots up to 24 hours in the future, as colors at a selectable altitude with wind direction and speed represented by smoothly-flowing particle animations. The layer features a dynamic legend at the bottom of the Maps page, showing the color range corresponding to the wind speed. The layer is included when packing for a flight. Included in Performance Plus and Business Performance plans.
11.5.8 Echo Tops (XM)

Echo Tops require a Sirius XM compatible receiver (GDL 51/52). The echo top map layer displays the height where ground-based radar detects reflectivities above 18 dBZ.

Use the altitude slider on the right to filter out echo tops at lower altitudes. Covers CONUS plus northern Mexico and southern Canada. 5000' increments from 0' to FL450.
11. MAPS

11.5.9 Cloud Tops

There are up to two Cloud Top map layers. Each map layer provides an altitude slider on the right side of the screen for filtering cloud tops at lower altitudes. When in flight, the Auto button at the top of the slider sets the selected altitude to your GPS altitude.

Cloud Tops (XM) (requires GDL 51/52) displays cloud top height derived from satellite temperature sensors. Covers the continental United States plus northern Mexico and southern Canada. Displays cloud tops in 5000’ increments from 0’ to FL400.

Cloud Tops (ADS-B) (requires ADS-B receiver) is a National Weather Service (NWS) forecast map layer. Using the High-Resolution Rapid Refresh (HRRR) model, cloud tops are derived from satellite temperature sensors.

Cloud Tops are only available for the continental United States. Cloud tops are unavailable for Alaska, Hawaii, Guam, or Puerto Rico. The Cloud Top forecast is generated by NWS every hour and transmitted over ADS-B every 15 minutes.
11. MAPS

11.5.10 Freezing Levels

Freezing Levels (requires GDL 51/52) displays freezing level boundaries in 1,000-foot intervals using a colored overlay. It covers the Continental United States plus northern Mexico and southern Canada.
11. MAPS

11.5.11 Hazard Advisor

Hazard Advisor (requires Pro Plus subscription or higher) is a preflight and inflight map overlay that depicts terrain relative to a selected altitude. The terrain is colored (red/yellow) based on the Hazard Altitude setting. The Hazard Altitude can be adjusted in More > Settings, Profile View settings, or using the map legend at the bottom of the Maps view.

The selected altitude automatically changes to reflect the GPS altitude when a GPS speed greater than the selected activation speed is detected. In flight, nearby obstacles within 1,000’ of GPS altitude are also depicted on the map when Hazard Advisor is enabled.
11. MAPS

11.5.12 Traffic

When connected to a compatible ADS-B receiver or while on the ground and connected to the Internet (Wi-Fi or Cellular Data), the Traffic map layer is shown. While on the ground and connected to the Internet, global traffic is streamed from FlightAware.

Traffic (Internet)

In partnership with FlightAware, when your iPad or iPhone is connected to the Internet (Wi-Fi or Cellular Data) you can stream live global traffic (including decoded callsign, Departure, Destination, and ETA) directly to the ForeFlight Maps page. The Internet Traffic is tied to the same Traffic map layer used to display ADS-B traffic, and that layer is available anytime your device is connected to the Internet on the ground.

The Traffic layer automatically switches to ADS-B Traffic when your device connects to a compatible ADS-B receiver. Internet Traffic is disabled automatically after takeoff, but ADS-B traffic can be displayed using a receiver like Sentry. It is impossible to display internet traffic while connected to an ADS-B receiver.

The tail number and altitude are hidden when zoomed out and come into view as you zoom in. Tap on a target to see additional information, including when the last position update was received from FlightAware.

Tap the auto-center button in the upper-right of the traffic target pop-up to keep it in view. Tap the auto-center button a 2nd time, or tap away from the target, to disengage auto-center.
11. MAPS

**Internet Traffic Search**

To search for a traffic target, tap the search box and enter the registration (eg: N-number) or callsign (eg: EDV4653 or SWA1257) and if the target’s position is available from FlightAware, the map will automatically center on the traffic target and display its additional information.

**Traffic Search**

**Traffic (ADS-B)**

ADS-B traffic is broadcast on the 978 MHz or 1090 MHz frequency (1090 MHz is required internationally and above FL180). Most modern ADS-B receivers are dual-band and capable of detecting traffic on both ADS-B frequencies. When connected to an ADS-B receiver, the Traffic layer is automatically enabled and ForeFlight displays traffic detected by the receiver on the Maps view.

Aircraft need not be ADS-B Out equipped for ForeFlight to receive traffic. However, if your aircraft is not ADS-B Out equipped, ForeFlight may show significant relative altitude discrepancies.

If your aircraft is not ADS-B Out equipped, ForeFlight may not display traffic detected from surveillance radar. If you are interested in purchasing an ADS-B receiver, ForeFlight recommends Sentry. For more information, visit [www.flywithsentry.com](http://www.flywithsentry.com).
11. MAPS

11.5.13 Search & Rescue

Map layers which are intended for use in Search & Rescue operations are available when Search and Rescue is enabled in More > Settings. For more details, see the Search and Rescue Guide in Documents > ForeFlight.

11.5.14 AIR/SIGMET/CWAs

AIR/SIGMET/CWAs cover regions provided by FAA and international SIGMETs. The shapes are colored-coded based on type:

Center Weather Advisories receive the same color as their underlying report (eg, Purple for IFR, etc…). These types can be selectively filtered from the map using the five buttons at the bottom of the screen when the layer is selected.

Tap an AIR/SIGMET/CWA shape to display the sidebar listing all advisories at that location, then tap on one to see full details about the advisory, including the highlighted lateral boundary (thick orange border in the image at right); this is especially useful when multiple *METs overlap in one place.

<table>
<thead>
<tr>
<th>Overlay Color</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Freezing level and icing conditions.</td>
</tr>
<tr>
<td></td>
<td>Turbulence and high winds</td>
</tr>
<tr>
<td></td>
<td>IFR conditions</td>
</tr>
<tr>
<td></td>
<td>Mountain obscuration</td>
</tr>
<tr>
<td></td>
<td>Convective outlook</td>
</tr>
<tr>
<td></td>
<td>SIGMETs of all types</td>
</tr>
</tbody>
</table>

AIRMET SIGMET CWA Legend
11. MAPS

11.5.15 NOTAMs

**NOTAMs** display geographic and obstacle NOTAMs on the map. NOTAMs are provided globally with the exception of Australia. NOTAMs are displayed on the map two hours prior to becoming active. NOTAMs are *not* affected by the Hide Airspace setting and are always depicted when enabled.

Red and yellow NOTAMs will appear before grey NOTAMs. Zoom in on the map to display grey and obstacle NOTAMs. Tap a NOTAM to reveal NOTAM details in the sidebar. Graphical NOTAMs can be displayed in flight if the Pack feature is used. Graphical NOTAMs are not provided with ADS-B.

**NOTAM Settings**

NOTAMs can be filtered based on type. To filter NOTAMs, open the Map Settings (gear button) when the NOTAM layer is selected and tap **NOTAMs Settings**.

When the NOTAMs map layer is enabled, NOTAMs which restrict airspace or potentially present a danger to non-participating aircraft are unable to be turned off with the settings. This includes scheduled and active NOTAMs associated with Military Operating Areas, Warning Areas, Controlled Firing Areas, and Danger Areas (Europe).
11. MAPS

NOTAM Color Coding

NOTAMs are color-coded based on NOTAM type and activation status. NOTAMs that are red when active (Special Use Airspace, Danger, and Restricted NOTAMs) are yellow two hours prior to becoming active.

<table>
<thead>
<tr>
<th>NOTAM Color</th>
<th>NOTAM Type</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Airspace</strong></td>
</tr>
<tr>
<td></td>
<td>• Active Special Use Airspace</td>
</tr>
<tr>
<td></td>
<td>• Active Danger and Restricted Areas</td>
</tr>
<tr>
<td></td>
<td><strong>Airspace and exercises</strong></td>
</tr>
<tr>
<td></td>
<td>• Scheduled Special Use Airspace</td>
</tr>
<tr>
<td></td>
<td>• Scheduled Danger and Restricted Areas</td>
</tr>
<tr>
<td></td>
<td>• Scheduled and Active Exercises</td>
</tr>
<tr>
<td></td>
<td><strong>Other NOTAMS</strong></td>
</tr>
<tr>
<td></td>
<td>• Unmanned aircraft operations</td>
</tr>
<tr>
<td></td>
<td>• Parachute operations</td>
</tr>
<tr>
<td></td>
<td>• Training areas</td>
</tr>
<tr>
<td></td>
<td>• Multiple obstacles covering an area</td>
</tr>
<tr>
<td></td>
<td><strong>Obstacle NOTAMS</strong></td>
</tr>
</tbody>
</table>

NOTE: A red NOTAM does not guarantee the airspace is restricted. Tap a NOTAM to reveal NOTAM details to determine the status of the airspace.

11.5.16 TFR

The Temporary Flight Restriction (TFR) map layer is available when the iOS device region is set to the United States. TFRs are issued exclusively for the United States and are yellow until 8 hours before the scheduled start time. Within 8 hours of a TFR being active, it is shown in Red until the end of the TFR.

TFRs IMPORTANT NOTICE:

Graphical TFR information is ONLY updated and displayed if you select the TFR Map layer while connected to the Internet or while using an in-flight weather receiver.

If the FAA publishes a TFR without associated graphical shape information, it may not be possible for ForeFlight Mobile to show the graphical TFR on the Map. Therefore you should also check the Airports page, under NOTAMs > TFRs for airports along your route, and contact FSS or ATC to confirm that your route does not cross any such TFRs.

While connected to the Internet, use the Pack feature to ensure all relevant TFR and weather data is downloaded. TFRs issued after you Pack will not be shown, unless you are using an ADS-B or XM in-flight weather receiver.
11. MAPS

11.5.17 GAFOR

**GAFOR** (Europe only) - The General Aviation Forecasts layer displays color-coded GAFOR indexes in regions for Germany and GAFOR routes for Switzerland, Austria, and Slovenia.

GAFOR is updated multiple times per day but is not available later at night (typically between 0000Z-0300Z). During this time, selecting the layer will display hash marks and "Data not available."

Tap on a GAFOR icon to see the Index, periods, and additional weather information: the reference altitude for that region or route, the cloud base height in feet, and the visibility in kilometers.

<table>
<thead>
<tr>
<th>Index</th>
<th>Germany &amp; others</th>
<th>Switzerland</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>C</strong> - Clear</td>
<td>Visibility &gt; 10km and cloud bases &gt; 5,000ft (Germany only)</td>
<td></td>
</tr>
<tr>
<td><strong>O</strong> - Open</td>
<td>Visibility ≥ 8km and cloud bases ≥ 2,000ft</td>
<td></td>
</tr>
<tr>
<td><strong>D</strong> - Difficult</td>
<td>Visibility ≥ 5km and cloud bases ≥ 1000ft &lt; 2000ft</td>
<td>Visibility ≥ 5km &lt; 8km and cloud bases ≥ 1500ft &lt; 2000ft</td>
</tr>
<tr>
<td><strong>M</strong> - Marginal</td>
<td>Visibility ≥ 1.5km and cloud bases ≥ 500ft &lt; 1000ft</td>
<td>Visibility ≥ 2km &lt; 5km and cloud bases ≥ 1000ft &lt; 1500ft</td>
</tr>
<tr>
<td><strong>X</strong> - Closed</td>
<td>Visibility &lt; 1.5km and any cloud bases or Any Visibility and cloud bases &lt; 500ft</td>
<td>Visibility &lt; 2km and cloud bases &lt; 1000ft</td>
</tr>
</tbody>
</table>

/ - Data Unavailable
11. MAPS

11.5.18 Weather Layers

Weather Layers - various METAR-derived weather measurements can be displayed on the map. For example, Flight Category, Winds Aloft, Dewpoint Spread, Temperature, Visibility, Surface Wind, Ceiling, Sky Coverage, PIREPs, and Lightning. The weather layers are updated every five minutes when connected to the Internet.

11.5.19 Winds

Winds Aloft from 3000’ to FL540 in 3000’ increments are depicted on the map. To adjust the altitude of forecasted winds, tap and hold on the altitude slider and move it up or down until the desired altitude is shown. In-flight, tap the Auto button to adjust the altitude automatically to your current cruising altitude.

Winds Aloft must be Packed to view while flying. Graphical Winds Aloft are not available over ADS-B. Tap a wind barb to see the forecasted wind speed, direction, and temperature at that altitude for the current three-hour forecast period.
11. MAPS

**Surface Winds** - derived from METARs at airports show surface wind speed and direction only at those locations.

**Surface Wind Analysis** (requires GDL 51 or GDL 52) - generated from an automated forecast model, shows forecast wind speed and direction at tens of thousands of evenly spaced points across the country. Good for viewing low-level circulations across a wide area.

**11.5.20 Obstacles**
Obstacles show obstacle markers based on Jeppesen obstacle data.

**11.5.21 User Waypoints**
All User Waypoints associated with the account are shown on the Map. See **User Waypoints** for more information.
11. MAPS

11.5.22 Fuel

Fuel prices - prices for 100LL and Jet-A fuel. Fuel prices are color-coded by price in the region where the airport is located - less expensive prices are in green, average in orange, and most expensive in red. UL94, UL91/96, and Mogas fuel are not depicted as a map layer.

11.5.23 Custom Map Layers

Custom Map Layers - display a custom KML or KMZ file on the Map. Multiple KML and KMZ files can be displayed at a time. See the Custom Map Layers section for additional details.

11.6 Weather Layer Time Slider

When you select a time or forecast-based weather layer like radar or satellite, a time slider appears at the bottom of the screen. Tap the play button on the left to animate the layer. The play button advances the time slider frame-by-frame, while the timestamp on the left shows the date and time when each frame is valid.

Forecast Weather Time Slider

Forecast-based weather layers use a vertical white bar on the time slider to indicate the present time. You can manually control the animation by tap-holding on the time slider and dragging it left or right to view different frames or by tapping on the line to the left or right of the slider to advance it one frame at a time in either direction.

11.7 Weather Legends

When Radar, Enhanced Satellite, Color IR Satellite, Icing, Turbulence, Clouds, Winds or the Hazard Advisor layers are selected, a color legend can be displayed just above the time slider at the bottom of the Maps page. Enable or disable the legend in Maps Settings.
11. MAPS

11.7.1 Weather Layer Legend

The following shapes and colors are used to depict weather status.

<table>
<thead>
<tr>
<th>Icon Color</th>
<th>Flight Category</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>LIFR:</strong> Ceiling less than 500 feet or visibility less than 1 mile.</td>
</tr>
<tr>
<td></td>
<td><strong>IFR:</strong> Ceiling 500 to less than 1,000 feet or visibility 1 to less than 3 miles.</td>
</tr>
<tr>
<td></td>
<td><strong>MVFR:</strong> Ceiling 1,000 to 3,000 feet or visibility 3 to 5 miles inclusive.</td>
</tr>
<tr>
<td></td>
<td><strong>VFR:</strong> Ceiling greater than 3,000 feet and visibility greater than 5 miles; includes sky clear.</td>
</tr>
<tr>
<td></td>
<td><strong>Unknown:</strong> Weather conditions are unknown.</td>
</tr>
</tbody>
</table>

**Flight Category Icons**

**NOTE:** Once flight category data exceeds three hours, it is removed from the map.
11.8 Maps Sidebar

The sidebar is displayed when map layers are enabled and a map element is tapped. The sidebar is also shown when the map is pressed and held (no active map layer required). When the map is pressed and held, the sidebar reveals the Add to Route menu.

The sidebar responds to tapped elements to display relevant information. For example, if the Fuel: Jet A map layer is enabled and a fuel price is tapped, the sidebar automatically displays FBO information. Similarly, tapping a METAR-based weather layer (flight category, visibility, etc) opens the airport details view with the METAR tab selected.

The sidebar’s airport details view displays all the same information as the full-screen Airports view. When an Aeronautical map airport icon is tapped, the airport details view opens to the Info tab. If the Show Weather First setting is enabled, the sidebar opens to the METAR tab.

Dynamic map layers such as Radar, Satellite, Icing (US & Global), Turbulence (US & Global), Clouds, and Winds (Temps & Speeds) do not reveal the sidebar with a single tap.
11. MAPS

11.8.1 Add to Route Menu

The Add to Route menu is displayed in the sidebar when the map is pressed and held. The menu can be used to create user waypoints, plan flights, and view aeronautical details.

There are two buttons at the top of the menu. The Wx button displays the Daily Weather menu. The 3D button offers an aerial three-dimensional view centered around the coordinates (Performance Plus, Business Performance, or MFB Performance plan required).

Add to Route Design

The Add to Route menu is divided into three sections.

Location

The location section displays the coordinates and highest elevation within 0.25 nautical miles. Coordinate format is determined by the Unit/Time setting.

Airspace

The airspace section lists all airspace from the surface to 60,000 feet. Tap Details to highlight the airspace on the map. The airspace details view displays frequencies, RVSM cruise tables, operational notes, speed restrictions, prior notification procedures, and communication details for CPDLC and satellite services.

Nearby

The nearby section lists nearby airports, navigational aids, and waypoints, sorted by distance. Icons are provided to assist with determining type. The All, Airports, Nav, and Waypoint buttons at the bottom of the menu filter the nearby list.

Heliports, Private Airports, and Seaplane bases are only included in the nearby list if the All or Airports filter is selected and the airport types are enabled in the Aeronautical Map > Airport settings.

Tap an element in the waypoint list to append it to the end of the existing route. Tap More to view Details or to plan a direct route.
11. MAPS

11.9 Map Annotations

Map Annotations allow you to draw on the map. Enable map annotations with the map settings (gear) button. Tap the annotation button on the left sidebar to enter drawing mode. Use one finger to draw and two fingers to move the map.

Map annotations remain on the map until cleared and automatically scale as you zoom out and in. To clear map annotations, tap the annotation button then tap Clear near the top of the screen. Tap the Undo or Redo buttons near the top of the screen to remove or add the latest annotations.

To adjust map annotation opacity, line thickness, or color, tap the drop-down at the left of the top annotations menu.

When using an Apple Pencil, the Auto Apple Pencil Drawing setting allows you to annotate the map without first tapping the map annotation button. If your iPad supports the Apple Pencil, add map annotations by touching your Apple Pencil to your iPad’s screen, while normal touch gestures still allow you to pan, zoom, or tap on map objects.
11. MAPS

11.10 Marked Positions

Marked Positions (available in Performance Plus and Business Performance plans) let you drop a position marker (green pin shape) at any point along your flight. To enable Marked Positions, tap the Maps Settings (gear) button and turn the Marked Positions switch ON.

To add a Marked Position, tap the Pin button on the left side of the map. Each position marker (green pin shape) includes the current time, GPS coordinates, altitude, and speed, and you can name the point and add additional notes if needed. If you do not enter a name the marker name shown on the Maps page is the time when the marker was dropped.

Markers are included in a Track Log recorded during the flight, and can be shared as part of the Track log, viewed in a flight whose ETD and duration span the time when the marker was dropped, and exported from the flight as a KML or CSV file.

The pins for positions marked during a particular flight are automatically hidden from the map 15 minutes after the end of the flight.

11.10.1 Editing Marked Positions

While a Marked Position is displayed on the map you can edit its information by tapping the green pin, then tapping the “Edit” button. Make any desired changes, then tap Save. While Editing a Marked Position it can be saved as a User Waypoint, so it can then be added to the Route or used as part of a Search & Rescue (SAR) pattern.

After the flight you can edit a Marked Position by viewing the Track Log containing the position and tapping the Marked Position or tapping the Track Log “Info” button and scrolling down to the Marked Position, or by opening a Flight whose ETD and duration span the time when the marker was dropped and scrolling down to the “Flight Log” section.
11. MAPS

11.10.2 Exporting Marked Positions

After a flight, positions marked during a flight can be directly exported as a KML or CSV file by tapping “Marked Positions” in the Flight Log section of the flight. Tap an individual Marked Position to edit its information, or tap the “Send to” button in the upper-right and choose the export file type.

Marked Positions are saved in a Track Log and are included when the Track Log is exported as a KML for use in another app.

11.11 Organized Track Systems

ForeFlight Mobile includes the option of displaying Organized Track Systems (OTS) for North Atlantic, North Pacific, and Australasia (Performance Plus or Business Performance plan required).

Tracks are updated automatically, and tapping on a track shows additional details such as valid times and controller notes.

Display the tracks by selecting the Aeronautical Data layer, then tapping the Maps Settings (gear) button, selecting Airways, and turning the Organized Tracks switch ON. You can display only the tracks relevant to your direction of flight by de-selecting East or West as needed.

NOTE: Organized Tracks cannot currently be automatically added to a route, but the points on a track can be added manually using touch planning.
11. MAPS

11.12 Smart Airway Labels

When the route entered in the Route Editor includes one or more airways, dynamic labels appear along each airway segment with information about the segment, including the name of the airway, the segment’s MEA, and the segment’s MOCA, if it has one. These labels expand to fill available space between waypoints, adding more information as you zoom in.

![Map Screen with Smart Airway Labels](image)

Smart airway labels only appear when an airway is explicitly named in the Route Editor, meaning that one of the route “bubbles” is the airway’s name. To ensure all airway labels are shown, turn the Airway Decoding Setting to “All Waypoints Shown.” Building a route with the individual waypoints in an airway but without naming the airway itself will result in the airway labels not appearing.

Smart airway labels are tied to other route labels and can be disabled by turning off Route Labels in Maps Settings.
11. MAPS

11.13 Attitude Indicator

Tap the Attitude Indicator/Synthetic Vision (SV) button at the top of the Maps page to view the Attitude Indicator. On the iPad the display also includes GPS altitude (MSL), GPS ground track, GPS ground speed and GPS calculated rate of climb (ft/min).

If connected to a Sentry or other supported AHRS-equipped external device, the display will also include AHRS-derived horizon (pitch & roll). If using a GPS source that does not include an AHRS sensor, then attitude information (pitch, roll) is not displayed and the horizon will appear level regardless of your aircraft's attitude.

If you have a Pro Plus or Performance Plus subscription, the display will also include a 3D depiction of the terrain ahead of you (Synthetic Vision). Obstacles and Terrain are colored based on the relative altitude (tied to the Profile view altitude selection). By default, Obstacles or Terrain more than 1000' below you are colored green; within 1000' below your altitude are Yellow; and within 100' below to above your altitude are Red. The gridlines on the Synthetic Vision (SV) view are aligned North-South and East-West for easy orientation.
11. MAPS

When the iPad is in landscape orientation the AI/SV display is shown on the left side of the screen. When the iPad is in Portrait orientation the AI/SV display is shown at the top of the screen on the Maps page.

Tap the full-screen/half-screen button in the lower left corner of the screen to switch between split-screen and full-screen AI display in either landscape or portrait orientation.
11. Maps

11.13.1 iPhone Attitude Indicator

The iPhone AI/SV display is always full-screen, and does not include the “tapes” for Ground speed, GPS rate of climb, GPS altitude, or the Ground Track compass circle. However you can display the Instrument panel at the bottom of the iPhone screen and choose instruments such as GPS altitude, Ground Speed, etc...

The iPhone AI/SV display works in portrait and landscape orientation on any iPhone currently supported by ForeFlight Mobile except the iPhone 5, 5C, 5S, and SE.

NOTE: the iPhone Display Zoom View setting must be set to “Standard” to use SV.

**IMPORTANT NOTICE: ATTITUDE INDICATOR DISPLAY**

THE FOREFLIGHT ATTITUDE INDICATOR / SYNTHETIC VISION (AI/SV) DISPLAY IS FOR INFORMATIONAL PURPOSES ONLY. DO NOT USE THE FOREFLIGHT AI/SV DISPLAY AS A PRIMARY INSTRUMENT IN ANY PHASE OF FLIGHT.

The AI display will automatically begin dimming to a darker “night” mode beginning 20 minutes before local sunset and will be fully dimmed 20 minutes after sunset. 20 minutes before local sunrise the AI display will automatically begin brightening to “day” mode.

Red chevrons are shown on the AI/SV display if the nose-up or nose-down attitude approaches 30 degrees. The chevrons point in the direction of pitch recovery.
11. MAPS

Unreliable GPS

In the event that AHRS or GPS data becomes unreliable, the affected instrument(s) will be X’d out until reliable data is received.
11. MAPS

11.13.2 Glance Mode

Swipe within the Synthetic Vision window to enter Glance Mode, an interactive experience with zoomable 360-degree view of the terrain, obstacles, airports, and traffic (requires a compatible ADS-B receiver) around your aircraft.

Once Glance Mode is enabled, the heading, altitude, and groundspeed indicators disappear to provide a more open view, and a circular field of view indicator including a “slice” appears to show the camera orientation relative to your ground track and the horizon.

Use single-finger touch to pan the view both horizontally and vertically, and use two fingers pinch to zoom in (up to 10x) and out. The view indicator “slice” narrows as the view zooms in, widens as the view returns to normal, gets shorter as the view tilts down, and gets longer the view tilts up:

![View tilted down](image1.png)  ![View tilted up](image2.png)  ![View zoomed out](image3.png)  ![View zoomed in](image4.png)

A radial timer begins moving clockwise around the view indicator after your last touch, and Glance Mode automatically exits if no touches are received within six seconds. In this example, approximately two seconds have passed since the last touch.

You can also tap on the view indicator to manually exit Glance Mode and return the view to its default forward direction.
11. MAPS

11.13.3 Portable AHRS Positioning

For accurate pitch & roll indications, a portable AHRS device should be positioned in the aircraft in a stable location that will not shift or move during the flight. If the portable AHRS shifts or moves, the AI/SV display may need to be recalibrated.

*Calibrate the AI/SV display*

When using an AHRS device, the Attitude Indicator can be calibrated to straight and level by tapping the AHRS data source label (1) in the lower-left of the Attitude Indicator display. Tap **Calibrate** (2) on the popup window and then tap on the **Zero Pitch & Bank** (3) to automatically set the current condition as level, or on the iPad only you can tap on any of the four Pitch & Bank arrows to adjust the pitch and roll in small increments. To save the calibration tap **Done** (4) in the upper left corner of the display. Or tap **Cancel** (5) to cancel the calibration.
11. MAPS

11.14 Map Search

To center the map on an airport, navigation aid, or waypoint, tap the Search box in the top right of the Airports, Maps, or Plates view. Type the location’s identifier, and tap the Search button on the keyboard.

You can search by identifier, latitude/longitude, or bearing and distance from a waypoint. The waypoint will be shown with a marker. Typing in a waypoint will not clear any route showing on the Maps view. To remove the animated waypoint marker, simply tap elsewhere on the map.

Example Searches:

- KJFK - Centers the map on KJFK airport
- FLW - Centers the map on the FLW VOR
- 32.3N/99W - Centers the map on the latitude/longitude
- 324455/-0804557 - Centers the map on 32°44’55”N, 80°45’57”W
- N324455/W0804557 - Centers the map on 32°44’55”N, 80°45’57”W
- 3244.92/-08045.95 - Centers the map on 32°44’55”N, 80°45’57”W
- 3244556/-08045576 - Centers the map on 32°44’55.6”N, 80°45’57.6”W
- 4952N - ARINC 424 coordinates, centers the map at 49N 52W
- HIGAL/320/15 - Centers the map on 15nm bearing 320°M from HIGAL. If a VOR is given as the reference waypoint, then the directional information is assumed to indicate a radial, not a bearing
- LAX/246R/20 - Centers map on the 246 radial, 20nm from LAX
- LAX/246M/20 - Centers map on the 246 Magnetic bearing, 20nm from LAX
- LAX/246T/20 - Centers map on the 246 True bearing, 20nm from LAX
- MZB293/SLI148 - Centers map on intersection of MZB’s 293 radial and SLI’s 148 radial
11. MAPS

For more information about the following SAR grid waypoint options, see the Search and Rescue Supplement in Documents > Drive > ForeFlight.

- CAP@ORD451C - Centers the map on the middle of CAP Grid ORD451, quadrant C.
- CAP@40092CD - Centers the map on the middle of CAP Cell Grid 40092CD.
- GARS@176LW3 - Centers the map on the middle of GARS Grid 176LW, quadrant 3.
- 15RTN50008000 or MGRS@15RTN50008000 - Centers the map on the middle of MGRS grid UTM zone 15, latitude band R, 100,000m grid square TN, easting 5000, northing 8000. MGRS coordinates no longer require entering MGRS@... before the coordinate values.
- N#### or a flight eg: ENY3961 - shows any flight that is either currently enroute, or scheduled to depart in the next 24 hours (based on currently filed flight plans) for that aircraft. Tap the entry to add that route to the NavLog.
11. MAPS

11.15 Flight Plan Menu

The Flight Plan (FPL) Menu contains three unique views. The views are accessed with buttons located near the bottom right corner of the FPL menu. To access the views, tap the FPL button in the upper toolbar to display the menu.

- **Edit** - Displays the Flight Plan Editor.
- **NavLog** - Displays the navlog for the planned route.
- **Profile** - Displays the Profile View (Pro Plus subscription or higher required).

---

**Flight Plan Editor**

**NavLog**

**Profile View**
11. MAPS

11.15.1 Route Summary

The bottom of the FPL Menu Edit and Navlog views contains a summary of the planned route. To the right of the summary are buttons for previewing the route in 3D, packing for the route, saving the route (Favorite), and sharing the route.

Total route distance, estimated time en route (ETE), estimated time of arrival (ETA), required fuel, and average wind component are displayed in the summary.

ETE is determined by evaluating the route, including the planned cruise altitude, forecast winds, and the selected aircraft’s performance profile. If an estimated time of departure (ETD) is specified, the ETA is populated. If an ETD is not selected, the ETA field is blank.

The fuel field depicts the fuel required for the route using the selected performance profile (not including alternate fuel requirements). The average wind component for the route is displayed for flights within seven days. Beyond seven days, wind forecasts can be unreliable and the summary will calculate the route using a zero wind condition.

11.15.2 3D Preview

To the right of the route summary is a globe icon. Tap the globe icon to preview the route in a three-dimensional view. **Route 3D preview** is a Performance-tier feature.

11.15.3 Pack

Pack provides a method for downloading all charts, weather, NOTAMs, and fuel-price data needed for the planned route. Pack can be accomplished from the Maps or Flights pages. For more information, see the **Pack** section.
11. MAPS

11.15.4 Favorite Routes

The star button toggles the favorite status of the current route. When the star icon is orange, the current route has been saved as a favorite. When marking a route as a favorite, you have the opportunity to name the route as something other than the default Origin to Destination name. Having a custom name can be helpful when searching for a route in the Favorite Routes list.

Route Sharing

Routes can be shared via various methods. Tap the share (Send To) button and select one of the sharing options.

- **Mail** creates a new email message with your navigation log and a screenshot of your trip. The message also includes a link that other ForeFlight Mobile users can tap to load your route onto their iPad or iPhone. **NOTE:** This option only appears if an email account is set up in your device's Mail app.

- **Flights** copies the current route and performance data to an empty flight plan on the Flights view. **NOTE:** Tapping this button does not directly file the flight plan or submit a request for a briefing.

- **Logbook** creates a new logbook entry and auto-fills it with the current route, aircraft, and estimated time enroute.

- **Print** allows printing of the navigation log to a connected AirPrint printer.

- **Clipboard** will copy the flight plan to the iPad internal clipboard to allow pasting in another application.

- **Cockpit Sharing** allows routes to be shared to other iOS devices on the same Wi-Fi network that are running ForeFlight (listed by device name). Wi-Fi ADS-B receivers such as Sentry accommodate Cockpit Sharing. This feature is enabled in **More > Settings**.
11. MAPS

11.15.5 Route Editor

The Route Editor (FPL menu Edit view) is used to plan routes. To create a route, tap within the dark blue space of the route editor and use the keyboard to enter route elements. See the flight planning chapter for additional information.

Route elements are any airport, navigational aid, waypoint, airway, or procedure. Route elements are color-coded based on type.

Route Editor (FPL - Edit Mode)

Route Editor - Element Icon Colors
11. MAPS

11.15.6 NavLog

The navigation log (NavLog) displays each leg of the route, with course (or heading, if winds aloft are included for your route), distance, fuel burn, and time statistics. The table listing shows the start and end points of each leg, the Totals for the route and Leg, and ETA.

On smaller screens, it’s not possible to display all of the columns. Only the destination, departure, heading, and distance/fuel/time totals are depicted.

- Planned Data: Information in the From, To, Heading (or Course), Totals, and Leg columns represent the planned route and is based on the information provided in the Search box, or based on your selected aircraft’s performance profile. This information is not updated once displayed.

- Real-Time Distance, ETE/ETA: The Remaining and ETA columns are updated in real-time based on current GPS position and groundspeed. The distance remaining on the leg, estimated time enroute for the leg, and estimated time of arrival at the next waypoint are displayed.

  **NOTE:** during pre-flight planning on the ground, the Remaining and ETA columns will not show accurate information, because they require actual (real-time) GPS speed and position to update.

- DIST, ETA, ETA, Fuel, and Wind: The information in the lower-left of the table are planned values calculated when the route is entered, so are not updated in-flight.

Tap on a waypoint ID in the table to jump to that waypoint on the map.

Tap the arrow button to adjust your route to any leg, or direct to a waypoint on a leg.
11. MAPS

11.15.7 Profile View

Profile View displays a cross-section of the planned route. Profile View displays the flight’s climb, en route, and descent phases. Initial and en route climb and descent rates are based on the selected aircraft’s performance profile and forecast weather.

Profile View is available on iPad and iPhone by selecting Profile from the bottom right corner of the FPL window. Profile View requires a Pro Plus or higher subscription.

Profile View Hazards (Terrain & Obstacles)

Profile View displays the hazards along your route. Hazards include terrain and obstacles. The hazards displayed in Profile View are determined by the Corridor Width setting in the Profile View Hazard Settings (gear button).

Corridor Width specifies the total distance (perpendicular to the route) for which hazards are included. For example, an 8 nm corridor width setting displays all hazards (terrain and obstacles) within 4 nm on either side the route.
11. MAPS

**Cross Track Error (XTE)**

When your GPS position (on the ground or in the air) is more than half the corridor width distance from the route, an XTE (cross track error) notation is displayed right of the Preview View Hazard settings button. The XTE notation indicates that you are outside the lateral range of displayed hazards.

**Hazard Colors**

Obstacles in Profile View are green and terrain is tan when the planned height above hazards exceeds the selected **Hazard Altitude** setting. Hazards in Profile View become yellow or red when the planned height above hazards is less than the Hazard Altitudes selection.

Hazard Altitude settings are available at the bottom of the Profile View hazard settings menu (gear button) and in **More > Settings. Hazard Altitudes Setting**

There are four hazard altitude settings. The **Normal 100’ / 1000’** setting is selected by default.

When the **Normal** hazard altitude setting is selected, hazards change to **yellow** when clearance is less than 1,000 feet. Hazards change to **red** when clearance is less than 100 feet.

When one of the other settings is selected (e.g., Heli 50’ / 300’), hazards are **yellow** when clearance is less than 300’ and **red** when clearance is less than 50’.

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**Profile View Hazard Settings**

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11. MAPS

Profile View Waypoints

Waypoints and their estimated crossing time are displayed near the bottom of Profile View. Crossing time is based on the estimated time of departure and is not updated in flight to reflect actual groundspeed. If a route contains multiple waypoints, Profile View may hide waypoints to avoid overlapping labels (see image below). Use two fingers to zoom in on Profile View to display hidden waypoints.

Waypoint Menu

Route changes can be made from the FPL editor, Maps View, or from within Profile View. See Route Editor for more information. To edit a route using Profile View

1. Use two fingers to zoom in on a waypoint in Profile View (if necessary).
2. Tap the waypoint near the bottom of Profile View.
3. Use the waypoint menu to specify a delay, altitude, speed, or flight rule change.
4. Tap Close in the upper-left corner of the waypoint menu (or anywhere outside the waypoint menu) to save the changes.
11. MAPS

Altitude Changes in Profile View

The initial cruise altitude for the route is displayed in a black box on the left side of Profile View. Slide the altitude box up or down to adjust the initial cruise altitude.

Cruise altitude for subsequent legs can be adjusted by tapping a waypoint where the altitude change is to occur and manually entering a new cruise altitude in the waypoint menu.

Profile View Altitude Changes
11. MAPS

Profile View in Flight

In flight, Profile View automatically switches to flight mode. Flight mode displays airspace, obstacles, and terrain 60 nm ahead of your location based on the current GPS track. To switch between flight and planning mode, tap the button in the top left corner of Profile View. Flight and planning buttons are only available when ForeFlight detects the aircraft is in flight.

When flying, the route button displays the aircraft’s current position along the planned route. Tap the aircraft button to return to flight mode. In flight mode, the Profile View automatically displays an aircraft symbol and horizontal dashed line at your geometric altitude relative to sea level (GSL). Height above ground (AGL) is shown below the aircraft’ GSL altitude.

Tap to switch between flight and planning mode

Profile View in Flight (based on current GPS ground track)

First Strike and Clearance Calculations

First strike and clearance calculations are conducted for planning and in-flight purposes. When in planning mode, the clearance calculation is the difference between hazards within the route corridor and the aircraft’s planned cruise altitude. In planning mode, the clearance calculation includes aircraft climb and descent performance. In flight mode, clearance is the difference between the highest point within 60 nm of the aircraft’s current track and the current GSL.

If clearance is less than zero, the First Strike field displays the time and distance to the hazard.
11. MAPS

Hazards within 1 nm of the departure and destination airports are not factored in the first strike calculation. Hazards within 5 nm of the departure and destination airports are not factored in the clearance calculation.

**Profile Layer Selector**

Tap the drop-down menu in the lower-left corner of Profile View to display the layer selector. The layer selector can be used to toggle airspace on and off.

Performance Plus and Business Performance customers can also display Turbulence, Icing, and Cloud layers in Profile view.

**Airspace in Profile**

When the **Airspace** layer is selected, controlled airspace, special use airspace, and TFRs within 1 nm of your planned route are depicted in Profile View.

Tap **Airspace** in the Profile View to reveal airspace details and to highlight airspace on the map.
Weather in Profile View

Performance Plus and Business Performance plans offer a cross-sectional view of icing, turbulence, and cloud forecasts along the planned route. Tap the layer selector to enable the Icing, Turbulence, or Cloud forecast.

Weather in Profile View uses the same color scales as the overhead map to depict varying intensities for each layer at multiple altitudes in relation to the route line.

Profile View automatically considers the planned departure and en route times to display the appropriate weather forecast. For longer flights, multiple forecast periods are blended together.

ForeFlight will display Icing, Turbulence, and Cloud forecasts in Profile View during a flight if Pack was used to download the data while connected to the Internet. Profile View does not support ADS-B Icing, Turbulence, or Cloud weather layers.

If no forecast data is available for all or part of the route, either because the duration of the flight exceeds the forecast period, or because Pack was not used prior to the flight, Profile shows hatch lines at the position along the route that corresponds to when the data is not available.

Clouds in Profile View
11. MAPS

Profile View Zoom

Profile view automatically scales to show the entire route. To zoom in on an area of interest, touch two fingers to the Profile view and slide them apart horizontally. Pinch them together to zoom out.

Profile View Airspace Details

Tap on airspace in the Profile view to see details. The map view then zooms in and highlights the selected airspace. Scrub (drag) a finger left or right across Profile View to view airspace at that point.

When scrubbing, a colored dot is displayed along the route line at that location. The color of the dot reflects the amount of terrain clearance based on the profile corridor and altitudes selected. Touch and scrub (drag) a finger left or right across the Profile view to view the altitude and distance from origin at that point.
Profile View - Ruler

When touching two fingers to the Maps page to display the ruler, the Profile view changes to display the airspace, obstacles, terrain, and selected weather information under the ruler.

When the ruler is displayed on the map, you can scrub along the Profile view to see the airspace details, altitude, and terrain clearance popup for the area corresponding to points along the ruler’s path. Single-tap on the Maps page to remove the ruler and return to the Route/Flight Profile view.
11. MAPS

11.16 Ruler

Distances can be measured on the Maps view at any time by holding down two fingers on the map until the ruler appears. Hold both fingers on the Map and slide them across the map to reposition the ruler to take measurements between other locations. The ruler is also handy for quickly visualizing great-circle (direct) routes between two points. When measuring distances less than three nautical miles the distance will also be displayed in feet, helpful for measuring available runway.

![Ruler on Maps](image)

When using the ruler in flight, the current groundspeed will be used to show the time of travel for the distance measured. When not in flight, the TAS from your current route or default aircraft will be used instead.

Fuel burn estimates are also shown using the fuel burn provided for the current route or from the default aircraft. All time and fuel estimates are based on no-wind conditions. Initial course bearings are also shown from each side of the ruler.

The ruler will remain on the Map after you remove your fingers. To remove the ruler, tap on the Map.
11. MAPS

11.17 Instrument Panel

The Maps view has an optional instrument panel which can display real-time information about your flight. To show or hide the Instrument Panel, tap the instrument button (airspeed indicator) in the upper toolbar.

On the iPad, six instruments are displayed in portrait mode and eight in landscape mode. On iPhones, up to five instruments are displayed in portrait and eight in landscape. Smaller iPhone’s display four instruments in portrait and six in landscape. The instruments on the right and left ends of the instrument panel in landscape mode are hidden when the device is rotated to portrait.
11. MAPS

11.17.1 Instruments

The default instruments displayed in the Instrument Panel can be replaced with an instrument of your choice by tapping an instrument and selecting a new one from the popup list.

The Select Instrument popup displays all available instruments. In portrait mode, the additional instruments visible in landscape are shown as being (already shown) even though they are not visible on the screen. Instruments are grouped into four sections. Instrument descriptions are provided below.

Standard Instruments

- **Groundspeed** displays GPS groundspeed.
- **GPS Altitude** displays geometric altitude as determined by an external GPS or the iOS device’s internal GPS.
- **Height AGL** displays the GPS altitude above the highest terrain within a 1/4 nm circle around your present location. The Height AGL instrument requires a groundspeed of 40 knots or greater and a Pro Plus or Performance Plus subscription.
- **Height MEF** shows a dynamic Maximum Elevation Figure (MEF) for a half degree latitude by half degree longitude box centered on your aircraft’s location when moving at 40 knots or greater. Height MEF is calculated as: the tallest obstacle or terrain in that box, rounded up to the nearest 200 feet. The Height MEF instrument requires a Pro Plus or Performance Plus subscription.
- **Pressure Altitude** and **Cabin Pressure** show pressure altitude as derived by a barometric sensor, if present. If connected to a Sentry or other external device with a built-in barometric sensor, both instruments will show the same value and Pressure Altitude will have an “Uncorrected” label, indicating that the value may not correspond to actual indicated altitude.

If Pressurized Cabin is enabled in the connected device’s settings, only the Cabin Pressure instrument will display a value. If connected to a source that can provide actual indicated altitude, the Pressure Altitude instrument will display a value with a “Corrected” label.
11. MAPS

- **G-Meter** displays loads placed on the pitch axis during flight when connected to Sentry Plus. Real-time accelerometer data can be displayed on the Sentry Plus OLED display and on the instrument panel.

- **Track** displays the ground track as determined by GPS. If connected to a device which can provide track (e.g. Satcom Direct), ForeFlight displays the track provided by the external device.

- **Accuracy** displays GPS accuracy as reported by a connected external device or the integrated iOS GPS processor. The Accuracy instrument is color-coded. The lower the accuracy number, the more accurate the position data. See **Ownship** for additional GPS accuracy implications.
  
  - **Green** - 20 meters or less.
  - **Orange** - 20 to 60 meters
  - **Red** - Greater than 60

- **Rate of Turn** shows the rate of turning degrees per second as determined by the GPS.

- **Vertical Speed** displays vertical speed in feet per minute or meters per minute as determined by the GPS. The units used to measure vertical speed can be edited in More > Settings > Units/Time > Altitude Instruments.

- **Climb Gradient** displays the climb gradient in feet per nautical mile (ft/nm) or meters per nautical mile (mpm). The units used to measure the climb gradient can be edited in More > Settings > Units/Time > Altitude Instruments.

- **Nearest Baro** displays the barometric pressure for the nearest reporting weather station.

- **Nearest Airport** shows the Cardinal position and distance from the nearest airport to your present location.

- **Nearest Navaid** shows the Navaid identifier and the radial and distance from that Navaid.

- **Horizon Distance** calculates the estimated distance to the horizon in nm based on your present altitude AGL, assuming a simplified, spherical model of the earth.

- **Flight Time** shows the total flight time while recording a Track Log. When Track Log recording is enabled, either manually or automatically, the Flight Time instrument will begin counting up from zero after you take off and continue counting until you land or the Track Log recording is stopped.
11. MAPS

11.18 Favorite and Recent Routes

The **Star/Clock** button in the upper toolbar opens the Favorites / Recents menu. Use the tabs near the top of the menu to switch between Favorite and Recent routes.

Routes are automatically added to the Recent route list as you plan flights. Favorite routes are added when you tap the star button at the bottom of the FPL view.

The Favorites list can be re-ordered. To re-order the list:

1. Tap the **Favorite** tab to display the list of Favorite routes.
2. Tap **Edit** in the menu’s upper toolbar.
3. Tap and hold a flight’s three bars (right side of the menu).
4. Without lifting your finger, drag the flight up or down to its new position.
5. Release your finger.
6. Repeat steps 3 - 6 as needed.
7. Tap **Done**.

To delete a Favorite or Recent route, swipe from right to left on the route.

Changes to your Favorite and Recent routes, including adding, removing, and changing the order of the routes, are automatically synced to each device that is signed in to your ForeFlight Mobile account.

When searching for a Recent or Favorite route, the lists can be filtered by searching on the following items.

- Tail Number
- Destination / Departure
- Favorite Route Name
- Route Elements (waypoint)
PLATES

The Plates view provides access to approach plates, taxiway diagrams, and arrival and departure procedures, via Flight Binders (based on departure & destination airports) or Other Binders.

12.1 About the Design

Flight Binders are automatically populated based on a route on the Maps page or a route in a Flight. Other Binders can be created with plates from one or many airports, including airports not in the route.

12.2 Flight Binders

Open the Binders Drawer by tapping the “Binders” button in the upper-left corner of the Plates page. Existing Flight Binders are shown at the top, and Other Binders in the “OTHER BINDERS” section below. Tap any binder to see its contents:
12. PLATES

12.2.1 Creating Binders

To create a new Flight Binder from the Plates page, tap **Add Flight Binder** ForeFlight will automatically show airport pairs based on the currently-entered route on Maps, as well as on the nearest upcoming route planned on Flights. Additional future flights are listed below. To create a Flight Binder for other airports, tap **add an empty binder** below the first 2 suggested options.

To create a Flight Binder from a Flight on the Flights page, tap the flight, then tap the **Send To** button in the upper right and choose **PLATES**.
12. PLATES

12.2.2 Editing Binder Names

Once a Flight Binder has been created, the name can be edited by tapping Edit at the top right of the Binders Drawer. Tap RENAME and edit the binders name in the pop up, then tap Save.

Or to delete a Flight Binder, tap the red delete circle, tap Delete, to delete it, then tap Save or a Flight Binder can also be deleted without tapping Edit by swiping from right to left across the Flight Binder name and tapping Delete.

Tap Close in the upper left corner of the Binder Drawer to expand the view for the Flight Binder.

12.2.3 Binder Structure

The Flight Binder layout is structured and consistent, grouping plates of the same type together for each of the selected airports. The plate groups below each airport follow a roughly chronological order: for the departure airport: airport and taxi diagrams, departure plates, approach plates for a return to base scenario, and miscellaneous plates. For the destination airport: arrival plates, approach plates, airport and taxi diagrams, and miscellaneous plates.

Tap on any empty group or tap twice on a non-empty group to review and add plates within that group.

The number shown on each plate group represents how many plates have been added to the Flight Binder for that group; those without a number have no plates added. In the APT example above, three plates have been added and the third plate is being viewed.

With the plate group pop-up open, tap on any plate name to view it without adding it, or tap the circle on the right to both view and add it to the binder. Tap the circle on the right again to remove a plate from the binder.
12. PLATES

Swiping Across Plates

After adding all the plates you want within each group, use a 3-finger swipe left or right to move through them plate-by-plate and group-by-group.

To select or search for a different airport in the Flight Binder, tap either of the Airport buttons on the left.

Single-tap on a plate to hide the top menu, and on an iPhone or an iPad in narrow split-screen, to hide or show the Plate Groups buttons on the left:
12. PLATES

To change between the plates in a Flight Binder or Other binder, use a 3-finger swipe left/right across the plate:

To change between pages of a multi-page plate, use a 1-finger swipe left/right across the plate:

NOTE: For a multi-page plate, the total number of pages is shown at the top (in this example: “Aerodrome Chart & Info (18 pgs)” and the current “Page # of n” is shown at the bottom (in this example, “2 of 18.”)
12. PLATES

12.3 Other Binders

Open the Binders Drawer by tapping **Binders** in the upper-left corner of the Plates page. Other Binders are shown below Flight Binders. Tap any binder to see its contents. To create a new Other Binder, tap **Add Other Binder** then enter the name of the new binder.

When viewing plates in an Other Binder you can use a 3-finger swipe left or right to move between all the plates in the Binder.
12. PLATES

12.3.1 Managing Plates in Other Binders

To add a plate to an Other Binder, tap the + ADD PLATE thumbnail, or tap in the search box in the upper-right of the screen, enter the desired search term, then scroll to select the desired plate.

The Plate Search box in the top toolbar allows you to search for a plate by airport, or by a specific procedure.

Example Searches:

- JFK - Lists all procedures associated with the JFK airport
- RHV GPS - Lists the RNAV (GPS) approaches to the RHV airport

Open the plate, then tap Add to Binder in the top menu. Or, tap the + ADD PLATE thumbnail to display an intelligent list of airports gathered from airports you’ve used in other parts of ForeFlight Mobile. Tap an airport to see the available plates, or enter the airport you want to add. Then tap the procedure name or icon to add it to the current plate binder.

Reordering Plates

To reorder or delete plates in an Other binder, tap Edit on the left side of the top toolbar. Then hold and drag the plate to the new location. Note that you can add the same plate to the same binder more than once. For example, you might create a binder that contains plates for three local airports. You could elect to include each airport’s taxiway diagram both before each airport’s departure procedures and after each airport’s approach plates, making it easier to find the diagram in context during both arrival and departure operations.

Removing Plates

To remove a plate from the binder tap the X icon in the upper left of the plate thumbnail. When done editing, tap Done.
12. PLATES

12.4 Controls

Single-tap on the plate to hide/show the plate controls across the top of the plate and the Instrument view across the bottom of the plate.

Invert Plate Colors & Brightness are found under “Settings”:

12.5 NOTAM Advisor

When you display an Approach Plate or Airport Diagram on the Plates page, ForeFlight cross checks downloaded NOTAMs and displays a warning banner at the top of the plate showing a count of relevant NOTAMs related to that plate or diagram.

Tap the red banner to view the NOTAMs that are associated with the airport diagram or instrument procedure. Tap again anywhere off of the popup to close it.
12.6 FBOs on Airport Diagrams

When viewing an Airport Diagram (either FAA or ForeFlight) tap FBO at the top of the Plates menu to show/hide the location of FBOs that are known to sell fuel at that airport.

FBOs can also be shown when the Airport Diagram is displayed on the Map (Pro Plus, Performance Plus, Business Pro, or Business Performance subscription required).

Featured FBOs are shown with a yellow flag; other FBOs are shown with a grey flag. Tap an FBO’s flag to open the FBO popup with details about the FBO including fuel prices.
12. PLATES

12.7 Printing Plates

Tap the Print button in the top toolbar of the Plates view. The Printer Options dialog box is displayed. From here, select a printer and a number of copies. Tap Print to send the selected number of copies of ALL plates in the binder to your printer.

To print only one procedure, tap the plate’s thumbnail to display it in the procedure viewer, then tap the Send To button and choose Printer. Printing requires an AirPrint capable printer.

12.8 Ensuring Your Plates Don’t Expire

When you view a plate or add it to your binder, ForeFlight uses either a copy of the plate stored locally on your iPad (by virtue of the fact that you’ve already downloaded it), or uses your iPad’s Internet connection to fetch the plate and store it locally on your iPad. In either case, the plates are viewable until they expire - whether you have an Internet connection at the time you view them or not.

When these plates expire, they are only automatically replaced if you have used the Downloads view to download new terminal procedures for the states/regions associated with the plates in your binder. Otherwise, the plates are only replaced when you open the binder and have an Internet connection. In-flight is not the time to discover this.

Be sure to check your selections in More > Downloads to ensure ForeFlight is set to download terminal procedures for all states covered in your binders and that all requested data has been downloaded. This ensures all plates in your binder will be current and available to you at any time - on the ground or in the air.
12. PLATES

12.9 Plates on a Map

This feature allows you to overlay geo-referenced plates or airport diagrams on the Maps view. Viewing plates and taxi diagrams on a Map requires an active ForeFlight Pro Plus, Performance Plus, Business Pro, or Business Performance subscription. To upgrade, visit https://www.foreflight.com/buy.

In North-up mode, the plate or airport diagram is displayed on the chart right-side-up; in Track-up mode, the plate rotates along with the chart so that your ground track is towards the top of the map.

Using in-flight ADS-B or XM weather, radar and other weather information can also be displayed on the Map with the plate. Radar or Satellite can be displayed while on the ground and connected to the Internet.

You can add the waypoints on the approach by rubber-banding your route: for each waypoint, touch-hold the route line, then drag it to the waypoint and release to display the waypoint popup. Choose the waypoint name to add that point.

Georeferenced Plate on Maps
12.9.1 Displaying a Plate on a Map

You can display a plate on the map in five ways:

1. From the **Airports** page, tap the **Map** button next to the desired approach in the Procedures list.

2. On the **Maps** page, touch-hold the airport, tap the the grey **More** button, then the **Details** button in the pop-up (or tap the airport on the Aeronautical layer) then choose the Procedure tab and tap Approach. Tap the **Map** button next to the desired approach.

3. From the Route Editor tap the colored bubble and choose “**Show Plate**…”

4. From the Flight Plan editor, tap the Procedure button to open the Procedure Advisor, then select the approach.

5. From the Plates page tap the **Send-to** button and choose “**Map**”
12. PLATES

12.9.2 Changing or Hiding the Plate on a Map

Once you have displayed an approach plate or airport diagram on the map, you can change or hide it by tapping the gear button or by tapping on the plate itself to display the popup. There you will see the selected plate (highlighted in yellow with the check-mark) and you can scroll through the list of available plates to select a different plate. Tap a different plate to display it on the Map.

You can also tap Hide Plate to remove the plate from the Map, or tap View Fullscreen to open the plate on the Plates page. Turn Show Annotations OFF to hide any annotations you made to the plate. Turn Invert Plate Colors ON for easier viewing in low-light situations, and you can adjust the transparency of the Plate on the chart using the slider.

12.9.3 Plate Transparency

Once you have displayed an approach plate or airport diagram on the map, tap the Map Settings “gear” button to adjust the transparency of the plate from the slider to the right for fully opaque (completely covers the underlying map) to the slider to the left for more transparent so the underlying map shows through. You can also adjust the transparency of the Radar layer (if selected).
The Documents view lets you download, import, view, and annotate PDF, image, Office (Word, Excel), Pages, Keynote, Numbers, and text documents. When Sync is activated for your account, documents, annotations, bookmarks, binders, and a document’s position in a binder are synced across all of your devices and are backed-up to the ForeFlight Cloud.

13.1 About the Design

You can organize your documents into Binders, bookmark areas of interest inside of a document, and quickly switch between reading a document and other app views. Document titles are included in ForeFlight’s unified App Search, so you can easily find and view documents from other app views.
13. DOCUMENTS

13.2 Drives and Binders

Drives in Documents serve a dual purpose: as a place where you can both select which documents to download from published Drives such as ForeFlight, FAA, NAV CANADA, Eurocontrol, etc..., and also where you can view and open those documents after you download them.

Binders are a folder that you create to compile and group documents you want to keep together. Binders can contain documents from any drive, and you can adjust the order of documents within the binder.

In the iPad the Catalog (Binder/Drive) view is automatically shown the first time you open the Documents view. Tap Close to hide the catalog and Catalog button to reopen it.

In the iPhone the Catalog view is always shown, and you can navigate into a Drive or Binder, then back to the Catalog view using the Catalog button in the upper-left.

Tap the “List/Binder” button at the top of the Documents view to switch between a condensed list view that shows each document’s name (plus any relevant date ranges), and a tiled view showing a thumbnail of each document.
13. DOCUMENTS

13.2.1 Folder Structure

Drives also support nested folders, allowing you to download documents individually, or to select the entire folder for download by tapping the blue download button to the right of the folder name or the corner of its thumbnail.

ForeFlight supports a wide range of file types for importing and viewing in Documents: pdf, tiff, tif, jpg, jpeg, gif, png, bmp, bmpf, txt, doc, docx, xlsx, xls, pptx, ppt, csv, pages, key, and numbers.

Cloud Document Drives (eg: from a connected Dropbox, Box, or Amazon S3 cloud storage account) continue to support nested subfolders. Cloud Document Drives are available with Pro Plus plans and above.
13. DOCUMENTS

13.3 Downloading and Opening a Document

Tapping a document title or thumbnail will cause it to be downloaded (if it's not already on your device) and then open. The green icon next to a document title or thumbnail indicates that the document has been downloaded and is already in the current Drive or Binder.

If you download an individual document in a Drive on one device, it will not automatically show on the other device. However if you add that document to a Binder it will show up as ready to be downloaded on the other device. Tap the document on the 2nd device to download it.

Tap on a folder to view its contents, and tap on the Download All button to the right of a folder name (or in the upper-right of the thumbnail) to download all documents in the folder.

To delete all documents from a drive (which shows the green check indicating that Drive-level automatic downloads are active or all current documents are downloaded), tap “Edit” then tap the large X button: . Then tap “Done” when finished.

13.4 Automatic Document Updates

When you download an entire Drive or folder using the blue “Download All” button, ForeFlight will automatically download updated versions of existing documents and new documents that are added to the drive or folder. If you only download individual documents from a Drive or folder, or if you first “Download All” but then remove a document, ForeFlight will keep the downloaded documents up to date when new versions become available, and new documents added to the Drive or folder will show in the list but will not be automatically downloaded.
13. DOCUMENTS

13.5 Creating and Managing Binders

Because of the introduction of Drives you no longer have to create a Binder to store your downloaded documents. However you still can add Binders to easily group documents from different Drives.

To create a new Binder, tap the green “Add New Binder” text at the bottom of the Binder list. Or when viewing a document, tap the “Binders” button, then tap the “+” and enter the new binder name.

A Binder created on one device is automatically synced to your other devices, and if you change that Binder’s name or delete it from one device, that change is also automatically synced to your other devices. But because documents are stored in Drives, deleting a Binder does not delete the documents it contained.

13.5.1 Organizing Binders

Binders appear in the list in alphabetical order, and documents initially appear in a Binder in the order they were added. You can organize individual documents within a Binder by tapping the “Edit” button, then touch-dragging the thumbnail or the stacked-line “handle” to position the document.

Tap “Done” when you have finished moving documents.
13. DOCUMENTS

13.6 Deleting a Document

You can delete a document in several ways, depending on the view.

In List view swipe-delete (swipe your finger from right to left, then tap the red “Delete” button) or tap Edit, then tap the red circular button followed by the red “Delete” button.

In Thumbnail view, tap “Edit” then tap the red “X”.

If you delete a document from a Binder it will be immediately removed from the Binder on all devices. **However the document will still be on the device, accessible in the source Drive.**

However if you delete a document from a Drive a pop-up will appear, depending on whether or not the document is already stored in a Binder. Once you tap “Remove” the document will be removed from the Drive and any Binders.

If the document is in a Binder, you will see this pop-up:

If the document IS NOT in a Binder, you will see this pop-up:
13. DOCUMENTS

13.7 Cloud Document Syncing

If you have a ForeFlight Pro Plus, Performance Plus, Business Pro, or Business Performance subscription, you can link your ForeFlight account to a Cloud storage provider such as Dropbox, Amazon S3, or Box account (free or paid) to synchronize PDF, image, Office (Word, Excel), Pages, Numbers, Keynote, and Text documents.

To link an account, sign-in to https://plan.foreflight.com/account and click on the Integrations tab, then click “Manage.”

Click the “Connect” button (which shows if there is not yet a connected account) to link your document storage account to your ForeFlight account.

IMPORTANT: When linking your cloud drive, DO NOT USE any of the following as your Catalog name, or as a sub-folder name inside the main folder: “ForeFlight”, “FAA”, “NAV CANADA”, “Eurocontrol”, “Imported”, or “Jeppesen”.

If your ForeFlight account has already been linked, click the “Manage” button to manage the Catalog name (which is the name of the Drive shown in the app), manage default Syncing behavior, or to un-link the account.

Once you link your Cloud Drive account to your ForeFlight account, any compatible documents you place in the appropriate folder on your computer are automatically shown in the ForeFlight Documents tab under the corresponding Drive (which is named whatever you entered in the “Catalog Name” field). If Document Syncing is checked, when a new device signs-in it will be “subscribed” to the Cloud Drive and all of the Cloud Drive documents will be automatically
13. DOCUMENTS

downloaded to that device. If “Document Syncing” is not checked, when a new device signs-in it will see the list of available documents, but none will be downloaded automatically.

13.7.1 Cloud Document Folder Structure

NOTE: These folder locations are created automatically when you link your account to your ForeFlight account.

- Dropbox: /Dropbox/Apps/ForeFlight
- Box: /Box Sync/ForeFlight

Amazon S3: folder is selected at the time of account linkage

Any changes or updates you make to a document in the Cloud Drive folder on your computer will be automatically appear in the available document list in the Cloud Drive in ForeFlight Mobile, and by default any new documents you add to the Cloud Drive folder will download automatically in ForeFlight Mobile.

13.7.2 Automatic Downloads

To download ALL listed documents into the Cloud Drive in the app, tap the blue “Download All” button in the upper-right corner. The button will change to a green check indicating that Cloud Drive-level automatic downloads are active, so new documents added to the Cloud Drive will show in the available document list and will be automatically downloaded.

NOTE: It is possible to have downloaded all documents in a Cloud Drive (so the green check shows in the upper-right) but to not have the Cloud Drive-level automatic downloads active. This means any documents added to the Cloud Drive in the future would be shown in the list but would not be automatically downloaded. If that happened, the “Download All” would again turn blue after the document(s) were added. Tap the green check to confirm the Cloud Drive-level automatic downloads are active.
13. DOCUMENTS

On an individual device, swipe-delete a document or folder in the Cloud Drive to remove it from the device. **Removing a document or folder will disable the Cloud Drive-level automatic downloads for that device**, so new documents added to the Cloud Drive will show in the available document list (along with the blue “Download All” button in the upper-right corner) but will not be automatically downloaded on that device.

Whenever new documents are added to your Cloud Drive folder, ForeFlight Mobile will briefly display a red dot with a number in it on the corner of the More tab, and on the Downloads view. Once the document downloads automatically, the red dot will disappear.

13.7.3 Downloading Individual Documents

To download individual documents into the Cloud Drive, tap on the Documents tab, then tap the Cloud Drive. Then tap on the thumbnail or title of the document that you wish to download.

After a document is removed from the Cloud Drive folder your computer, it will also be automatically deleted from any devices that have downloaded it the next time the devices connect to ForeFlight’s servers via the Internet. The removed document will be deleted from both the Cloud Drive and from any other Binders where the document(s) had previously been saved.

13.7.4 Missing Drive

If the Cloud Drive account is un-linked from your ForeFlight account, all Cloud Drive documents are retained on the devices that had downloaded them in a Drive called `<Missing Drive>`. The documents will remain on the iPad until they are either deleted by the pilot, or the pilot signs-out of their ForeFlight account on the iPad. Signing-out removes all synced documents.

To delete all documents from a Cloud Drive on the device, first tap the blue “Download All” button or the green check in the upper right. Then tap “Edit”, and finally tap the large red “X” button. If a Cloud Drive account is un-linked but then re-linked with a different Catalog Name than before, a new Cloud Drive name will be created on all signed-in iPads.
13.8 Importing Documents

To import documents from Files, tap the [+]
button in the upper toolbar. When the pop-up is
open, tap the circular Options button in the
upper-right of the pop-up and choose “Select”.
Then select the documents and tap "Done" to
import. ForeFlight supports pdf, tiff, tif, jpg,
jpeg, gif, png, bmp, bmpf, txt, doc, docx, xlsx,
xls, pptx, ppt, csv, pages, key, and numbers.
Very large image files or PDF files containing scanned images may open slowly,
especially on earlier iPad models. The maximum individual imported file size is 500MB.

On iPad you can also drag-and-drop files from other apps that support the gesture into
the Imported Drive by opening both apps in split screen and dragging files over to the
Imported Drive in Documents in ForeFlight Mobile.

Select multiple documents for simultaneous import by “stacking”: in the other app,
touch-hold on the first document, then while holding the finger that document, tap other
documents with a different finger.

The drag-and-drop workflow (including the “stacking” gesture for multiple files) also
works within any Document Drive to add documents or entire folders to a custom
binder. Drag the documents and/or folders over any binder in the Catalog on the left
and release to add them to the binder, or drop them on the green “Add New Binder”
button to create and name a new binder containing the selected items.
13. DOCUMENTS

13.8.1 Importing Documents from iTunes or other Apps

You can import documents using iTunes, or from other apps including but not limited to Safari, Mail, Dropbox, and Gmail. Imported documents are all saved in the “Imported” Drive.

- Importing from iTunes - Plug your iPad into your computer using the Apple USB cord and start iTunes on the computer. Inside iTunes, click on the name of your iPad under the Devices listing on the left. On the right pane, click the Apps tab at the top. Scroll to the File Sharing section at the bottom of the page and click on ForeFlight. On the right, you will see a table titled ForeFlight Documents. Drag and drop your files onto this table. While the files are copying over, you will see a brief Sync in Progress message on your iPad. After the copying has completed, launch ForeFlight Mobile and tap on the Documents tab. The imported Documents appear in the “Imported” Drive. After a file is imported, it will disappear from the iTunes listing.

- Importing from Mail (email) - tap the attachment to open or view it, then tap the “Send-to” button, then scroll right in the row of apps and tap “Copy to ForeFlight”. Or touch-hold on the attachment (such as a PDF) then scroll right in the row of apps and tap “Copy to ForeFlight.”

- Importing from Dropbox app - open the Dropbox app, tap the file, tap the 3-dot “menu” button in the upper-right, then choose Export. In the bottom row of options, choose “Open In...”. Scroll right in the row of apps then tap “Copy to ForeFlight”
13. DOCUMENTS

If a document does not import, make sure it is a supported file format. After a document is imported, it is always added to the Imported Drive. To also add an imported document to a Binder, open the Document, tap the Binder button at the top right, and select one or more Binders from the list.

13.8.2 Renaming an Imported Document

Documents directly imported to ForeFlight Mobile can be renamed from the Drive view by tapping the “Edit” button at the top of the page, then tapping the “RENAME” button on the document. Enter the new name then tap “Save”.

Renaming an imported document will update its name in both the Imported drive, as well as any other Binders to which it has been added.
13. DOCUMENTS

13.9 Viewing a Document

Tap any document thumbnail to open it. The document viewer supports standard pinch and expand zooming, and panning touch gestures. Swipe left and right with a single finger to change pages. You can close the document by pinching (zoom out gesture) from the view on any page and you can open a document by expanding (zoom in gesture) from the Drive or Binder view.

Tap once on a document page to bring up the toolbar at the top and page scrubber at the bottom. Tap again on the document to hide these overlays.

| Settings: shows the screen brightness slider, and the Invert Document Colors switch for better low-light viewing of documents. |
| Settings: shows the screen brightness slider, and the Invert Document Colors switch for better low-light viewing of documents. |
| Toggles between full page view and thumbnail view, which shows a thumbnail for each page in the document. This button is only shown for PDF documents. |
| Toggles between full page view and thumbnail view, which shows a thumbnail for each page in the document. This button is only shown for PDF documents. |
| Display the Annotation menu. This button is only shown for PDF documents. |
| Display the Annotation menu. This button is only shown for PDF documents. |
| Add the current document to an existing or new Binder |
| Add the current document to an existing or new Binder |
| Search/Contents/Bookmarks. Search for text in the document, Show the Table of Contents, and show Bookmarks |
| Search/Contents/Bookmarks. Search for text in the document, Show the Table of Contents, and show Bookmarks |
| Bookmarks a page in the document. This button is only shown for PDF documents. |
| Bookmarks a page in the document. This button is only shown for PDF documents. |
| Shows a menu for Printing or Emailing a document. Emailing is not available for certain copyrighted document catalogs. |
| Shows a menu for Printing or Emailing a document. Emailing is not available for certain copyrighted document catalogs. |
| Disables touch interaction (zooming and scrolling), which minimizes the risk of accidental closure when in turbulence. The lock button can also, optionally, disable all buttons on the screen, including those that change views. That feature is configured in Settings (“Lock Disables Buttons”). |
| Disables touch interaction (zooming and scrolling), which minimizes the risk of accidental closure when in turbulence. The lock button can also, optionally, disable all buttons on the screen, including those that change views. That feature is configured in Settings (“Lock Disables Buttons”). |
13.10 Searching for a Document

ForeFlight Mobile’s unified App Search allows you to search for document titles across the Documents as well as Airports, Maps, and Plates tabs. When searching on the Documents tab, Document title matches show up as the first category in the results. When searching on other tabs, scroll down to find Document results. To search text inside a PDF document, open the document and tap the search button (see below).

13.10.1 Searching in a Document

Tap the Search button to display the search box, then enter your search term(s). All matches will be shown in the scrollable expanding list. Tap the entry to jump to the desired page, where the search term(s) will be highlighted in yellow.

13.10.2 Bookmarks

While viewing the page you would like to bookmark, tap the Bookmark button then enter the name you would like to give the bookmark and tap the “Add Bookmark” button. View all bookmarks for the current document by tapping the “Search” button and choosing the Bookmarks filter.

To remove a bookmark, tap the “Search” button, choose the Bookmarks filter, then swipe-delete the bookmark you want to remove: swipe your finger across the title, then tap the red “Delete” button. Or you can tap on the bookmark you want to remove to change to that page of the document. When that page is displayed, tap the bright-blue Bookmark button to remove the bookmark.
13. DOCUMENTS

13.11 Ensuring Your Documents Don’t Expire

When a new version of a document is available, a red badge will appear on the app icon and there will be a new item in the Downloads view. Tap the blue Download button at the bottom of the Downloads view to download the latest documents, along with any other data updates that are available.

Documents from providers such as the FAA, NAV CANADA, and Eurocontrol, that are updated on a regular 28-day or 56-day cycle will be available for download a few days before the document expires. Once the new version of a downloaded document becomes effective, any old, expired versions will be deleted from your device.
The Imagery view provides collections of weather images from around the globe.

### 14.1 About the Design

Images are divided into categories by type. When viewing a category, a current thumbnail image is shown for each available image.

Full-size images are displayed full screen and support standard pinch and expand zooming, and panning touch gestures.
14. IMAGERY

14.2 Selecting a Collection

Tap a collection in the left-side list to show thumbnails from that set on the right side. Other collections are available by tapping the USA/Global geography selector at the bottom of the list.

14.2.1 NATIONAL - Featured

**Flight Category** - Updated once every 30 minutes, the flight category chart highlights adverse flight conditions affecting the conterminous U.S. and southern Canada. Using colored dots this chart depicts the lowest flight category considering both ceiling and visibility for stations reporting marginal VFR (blue), IFR (red) or low IFR (magenta). Also included are recent pilot weather reports of moderate or greater turbulence (tan) and moderate or greater icing (green) using standard pilot report symbology.

**Latest Surface Analysis** - The mean sea level (MSL) surface analysis chart is issued every three hours by a forecaster at the Weather Prediction Center (WPC). This chart depicts the synoptic and sub-synoptic/mesoscale features including the location of high and low pressure centers, fronts, troughs, outflow boundaries, squall lines, dry lines and an isobaric analysis. The domain includes much of North America, the Western Atlantic and Eastern Pacific oceans and the Gulf of Mexico. This analysis is valid at the synoptic times of 0000 UTC, 0300 UTC, 0600 UTC, ..., 2100 UTC. The latest surface analysis becomes available approximately 1 hour and 30 minutes after these synoptic times.
Today’s Forecast - The Weather Prediction Center (WPC) National Forecast Chart provides an overview of expected weather for today, with emphasis on certain hazardous and significant weather. They summarize forecasts from several of the National Centers for Environmental Prediction (NCEP) Service Centers including the Storm Prediction Center (for severe thunderstorm and tornado outlooks), the National Hurricane Center (for tropical storm and hurricane forecasts), and the Weather Prediction Center (for information concerning heavy rainfall, flooding, winter weather, and general weather). With overlaid frontal forecasts, these displays serve as a good overview of the expected weather for today.

14.2.2 CONUS WEATHER

Prog Charts - The Prog Chart collection contains the latest surface analysis chart which is updated once every three hours. This is not a forecast, but represents the latest surface conditions valid in the recent past. This collection also contains short and extended range forecasts that are also known as "prog" charts. Short range forecasts are updated at various times throughout the day as labeled below each thumbnail image.

The primary goal of the short range forecasts are to depict the evolution of major weather systems that will affect the conterminous U.S. during the next 60 hours. These forecasts combine the Weather Prediction Center (WPC) forecasts of surface fronts, MSL pressure (isobars) and high/low circulation centers along with a depiction of the expected weather type (precipitation). The precipitation forecast shown on this chart defines expected coverage and is valid at the time on the chart (not over a range of time).
Prog charts use the following colors to depict different weather types (precipitation):

- **Rain (Chance)** - There is chance of measurable rain (≥0.01") at the valid time.
- **Rain (Likely)** - Measurable rain (≥0.01") is likely at the valid time.
- **Snow (Chance)** - There is chance of measurable snowfall (≥0.01" liquid equivalent) at the valid time.
- **Snow ( Likely)** - Measurable snow (≥0.01" liquid equivalent) is likely at the valid time.
- **Mix (Chance)** - There is a chance of measurable mixed precipitation (≥0.01" liquid equivalent) at the valid time. "Mixed" can refer to precipitation where a combination of rain and snow, rain and sleet, or snow and sleet are forecast.
- **Mix (Likely)** - Measurable mixed precipitation (≥0.01" liquid equivalent) is likely at the valid time. "Mixed" can refer to precipitation where a combination of rain and snow, rain and sleet, or snow and sleet are forecast.
- **Ice (Chance)** - There is a chance of measurable freezing rain (≥0.01") at the valid time.
- **Ice (Likely)** - Measurable freezing rain (≥0.01") is likely at the valid time.
- **T-Storm (Chance)** - There is a chance of thunderstorms at the valid time. Areas are displayed with diagonal hatching enclosed in a dark red border.
- **T-Storm ( Likely and/or Severe)** - Thunderstorms are likely and/or the potential exists for some storms to reach severe levels at the valid time.

Extended range Progs are also prepared by forecasters at the WPC. A new extended range forecast is issued daily around 0330 UTC and updated again at 1500 and 1900 UTC. Only surface fronts, MSL pressure (isobars) and high/low circulation centers are depicted from 72 hours (Day 3) through 168 hours (Day 7). Each forecast is valid at 1200 UTC. A forecast of instantaneous precipitation is not depicted on extended range Progs.
14. IMAGERY

6 HR Quantity of Precipitation - Quantitative Precipitation Forecasts, or QPFs, issued by forecasters at the Weather Prediction Center (WPC) depict the amount of liquid precipitation expected to fall in a defined period of time, in this case, six hours. Valid times are shown in the lower left. In the case of snow or ice, QPF represents the amount of liquid that will be measured when the precipitation is melted. It is important to recognize that QPF does not forecast the precipitation type or whether or not the precipitation will be from convection. It is solely used to forecast the amount of precipitation over a given location in inches using solid colored contours based on the legend on the lower left of the chart. An “X” on the chart simply defines a local maximum precipitation amount within a contoured area. Keep in mind that precipitation amounts can vary significantly over short distances, especially when thunderstorms occur, and for this reason QPFs issued by the Weather Prediction Center (WPC) are defined as the expected "areal average."

12 HR Probability of Precipitation - The Probability of Precipitation (PoP) forecast issued by forecasters at the Weather Prediction Center (WPC) depicts the chances of precipitation over a 12 hour forecast period for the next three to seven days. Probabilities are contoured using solid colors as shown in the legend at the bottom of the chart. Numbers shown on the map represent a probability for a particular city over the valid forecast period. Important: The valid time in the lower left defines the ending time of the 12 hour forecast period. For example, a forecast valid at 00Z on February 13th would include the period from 12Z February 12th to 00Z February 13th.
14. IMAGERY

**Outlook (SIGWX)** - The low-level SIGWX graphics is a forecast of aviation weather hazards, primarily intended to be used as a guidance product for briefing VFR pilots. The forecast domain covers the conterminous U.S. for altitudes below 24,000 feet (400 mb). These charts are issued four times a day and are valid at 0000 UTC, 0600 UTC, 1200 UTC and 1800 UTC. Each issuance includes both a 12 and 24 hour forecast depicting the freezing levels (dashed cyan), turbulence (dashed orange), and low cloud ceilings and/or restrictions to visibility shown as contoured areas of marginal VFR (blue) and IFR conditions (red). A two-panel chart is also provided that presents the 12 and 24 hour forecasts in the same image.

**Convective Outlooks** - The convective outlooks issued by forecasters at the Storm Prediction Center (SPC) provide an overview of areas that may experience thunderstorms over the next eight days with emphasis on the location of severe convection. Included in this collection are the latest severe thunderstorm (blue) and tornado (red) watch areas along with categorical and probabilistic forecasts for Day 1 (today), Day 2 (tomorrow), Day 3 (the day after tomorrow) and a categorical forecast for severe thunderstorms only for Day 4 through Day 8. Colored contours are shown to depict the threat risk of severe thunderstorms as shown in the legend below. Additionally for Day 1, a probabilistic forecast for tornadoes, large and damaging hail and strong and gusty winds is included.
**Convective Forecast** - The Collaborative Decision Making (CDM) Convective Forecast Planning (CCFP) guidance is a graphical representation of convection meeting specific criteria of coverage, intensity, echo height, and confidence. CCFP graphics are produced every two hours and is valid at 2-, 4-, 6-, and 8-hours after issuance time. This forecast is generated automatically and does not use the same criteria as is used for issuing convective SIGMETs. Hatched contours include sparse coverage-low confidence, sparse coverage-high confidence and medium coverage-high confidence. A forecast for echo tops is also included. Keep in mind this is not a maximum tops forecast. This is best used for strategic planning purposes for aircraft making longer flights at altitudes above FL250.

**Extended Convective Forecast** - The Extended CDM Convective Forecast Planning (CCFP) planning tool is a graphical representation of the forecast probability of thunderstorms. This forecast is automatically generated and identifies where thunderstorms are likely over the next 78 hours. It is important to note that this is not a precipitation forecast. Areas outside of the shaded contours could contain areas of precipitation that are not as likely to be convective. Contours are shaded on based on convective probability as shown in the legend below.
14. IMAGERY

14.2.3 GRAPHICAL AVIATION FORECASTS

In late 2019 NOAA discontinued distribution of the GFS MOS Ceiling Forecast and Visibility Forecast Graphical products.

ForeFlight now provides the Graphical Aviation Forecasts for Cloud Coverage and Surface Conditions. The forecasts are provided for CONUS and nine additional regions, for 6 forecast periods up to 18 hours in the future.

The Cloud Coverage product depicts the degree of cloud coverage (few, scattered, broken, or overcast) as well as cloud top altitudes and icing or mountain obscuration AIRMETs.

The Surface product depicts obscuration hazards and types (haze, fog, smoke, or dust/sand), weather conditions with color-coded probabilities (rain, snow, mix, or ice), thunderstorm probabilities, surface visibility, IFR or surface wind AIRMETs, and surface wind barbs with gust speeds indicated by red extensions on each barb’s tail.
14. IMAGERY

The Surface product utilizes the METAR weather symbols; a few common ones are listed here for quick reference. For a complete list, see the “Weather Legends in ForeFlight Mobile” in Documents > ForeFlight.

<table>
<thead>
<tr>
<th></th>
<th>BR: Mist or light fog</th>
<th>VCSH: Vicinity Showers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DZ: Moderate drizzle</td>
<td>SHRA: Moderate rain showers</td>
</tr>
<tr>
<td></td>
<td>SN: Moderate snow</td>
<td>RA: Moderate Rain</td>
</tr>
<tr>
<td></td>
<td>-FZRA: Light freezing rain</td>
<td>TSRA: Light to Moderate thunderstorm with rain</td>
</tr>
</tbody>
</table>

14.2.4 Advisories

**Graphical AIRMETs** - Also known as G-AIRMETs, Graphical AIRMETs provide a graphical representation of en route advisories for adverse weather including IFR conditions and mountain obscuration, turbulence, icing and freezing level. Graphical AIRMETs are issued by the same forecasters at the Aviation Weather Center (AWC) that issue the legacy AIRMET and Area Forecast (FA). Forecasts are issued four times daily at 0245Z, 0845Z, 1445Z and 2045Z. Graphical are amended as necessary.

Unlike the legacy AIRMET that is valid over a six hour period with a six hour outlook, the Graphical AIRMET consists of five snapshots valid at three hour intervals out to twelve hours. The first three Graphical AIRMET snapshots including the Initial, 3 HR and 6 HR make up the same area as included in the legacy AIRMET.
14. IMAGERY

**SIGMETs** - These en route advisories are issued on an as-needed basis by forecasters at the Aviation Weather Center (AWC). They include advisories for convection, non-convective severe or extreme turbulence, non-convective severe icing, dust storms and sandstorms lowering visibility to below 3 miles and volcanic ash. When issued, these advisories are valid for a four hour period.

**WINDS ALOFT**

The winds aloft section provides two-dimensional graphics of winds at a multitude of altitudes from the initial time (analysis) with a lead time out to 48 hours. Standard wind barbs (direction and speed) are shown on each chart with the highest winds color contoured in knots using the legend at the bottom of the chart.

14.2.5 **ICING**

**Lowest Freezing Level** - Updated hourly, this includes both an analysis and forecast of the height of the lowest freezing level through the next 18 hours. The lowest freezing level is depicted at 2,000 ft increments in hundreds of feet above mean sea level (MSL) using the color scale at the bottom of the chart. Areas depicted in white consist of regions where the entire temperature profile above the surface is below 0 degrees Celsius. Hatched or stippled areas imply there are multiple freezing levels with the color presented in the hatched areas being the lowest of the multiple freezing levels.
14. IMAGERY

**Icing Probability Analysis (CIP)** - The Current Icing Product (CIP) combines a Rapid Refresh model forecast with the latest surface observations, visible and IR satellite, NEXRAD, lightning as well as pilot icing weather reports to describe an hourly, three-dimensional analysis of the icing environment using a calibrated probability. Probabilities are shown as percentages using the scale below. A new CIP analysis is generated hourly every 2,000 feet for altitudes from 1,000 feet MSL to FL290. Also a Maximum Icing Probability analysis is provided that is a composite of the maximum probability of all altitudes up to and including FL300. The hourly analysis becomes available about 20 minutes past each hour. Note that this is not a forecast, but a peek in to the recent past.

![Icing Probability Analysis](image)

**Icing Severity Analysis (CIP)** - The Current Icing Product (CIP) combines a Rapid Refresh model forecast with the latest surface observations, visible and IR satellite, NEXRAD, lightning as well as pilot icing weather reports to describe an hourly, three-dimensional analysis of the icing environment using icing intensities. CIP Severity encompasses five categories represented by shades of blue to include trace, light, moderate and heavy as shown in the legend below. Additionally, overlaid on the severity chart is an analysis of the Supercooled Large Drop (SLD) potential shown in red hatching. A new CIP analysis is generated hourly every 2,000 feet for altitudes from 1,000 feet MSL to FL290. Also a Maximum Icing Severity analysis is provided that is a composite of the maximum intensity for all altitudes up to and including FL300.

![Icing Severity Analysis](image)
14. IMAGERY

**Masked Icing Severity > 25% (CIP)** - The Current Icing Product (CIP) masked severity combines the CIP Probability and CIP Severity analyses. Shown in shades of blue are icing intensities with probabilities greater than 25 percent. Icing intensities in areas with less than or equal to 25 percent probability are masked and show up as light gray as shown in the legend below. This allows pilots to visualize the intensities for the icing environment with the highest probability. Note that Supercooled Large Drop (SLD) potential is not shown on this analysis.

**Masked Icing Severity > 50% (CIP)** - The Current Icing Product (CIP) masked severity combines the CIP Probability and CIP Severity analyses. Shown in shades of blue are icing intensities with probabilities greater than 50 percent. Icing intensities in areas with less than or equal to 50 percent probability are masked and show up as light gray as shown in the legend below. Note that Supercooled Large Drop (SLD) potential is not shown on this analysis.
14. IMAGERY

**2, 3 and 6 HR Icing Severity Forecast** - The Forecast Icing Product (FIP) uses the Rapid Refresh model forecast to describe a three-dimensional forecast of the icing environment using icing intensities. FIP Severity encompasses five categories represented by shades of blue to include trace, light, moderate and heavy as shown in the legend below. Additionally, overlaid on the severity chart is a forecast of the Supercooled Large Drop (SLD) potential shown in red hatching. Forecasts are provide for 2, 3 and 6 hours.

![Icing Severity Chart](image1)

**14.2.6 Turbulence**

**Graphical Turbulence Guidance** - The Graphical Turbulence Guidance (GTG-3) includes an analysis and forecast for both clear air turbulence (CAT) and mountain wave turbulence (MTW), as well as an (All) section that combines them, with a new forecast updated every hour. The GTG includes turbulence from 1,000’ to FL450 with a vertical resolution of 2,000’. Turbulence is measured in eddy dissipation rate (EDR), which is an objective measure of atmospheric energy dissipation, with larger numbers indicating a more turbulent atmosphere.

![Turbulence EDR Chart](image2)
14. IMAGERY

14.2.7 SATELLITE

Visible - The satellite imagery contains national and regional satellite images from the GOES-15 (West) and GOES-13 (East) satellites. These images are updated every 15 minutes. On the visible images clouds and snow appear bright white, but oceans, lakes and trees are much dimmer. After the sun has set and before the sun has risen, these images will be totally black leaving just the geopolitical boundaries.

Infrared - The infrared satellite is a colorized depiction of temperature in degrees Celsius and is available during both the daytime and nighttime hours. The data measured by the satellite are calibrated and colorized according to this temperature with red shades representing warmer temperatures and blue shades representing cooler temperatures. Typically the temperature of the atmosphere decreases with increasing height. Therefore, using this depiction can give you an idea of which clouds are high-level and which are low-level based on the cloud top temperature. Keep in mind that with low-topped clouds near the surface, the temperature of the cloud tops can be actually a warmer than the temperature of the surface. Therefore, this depicts the temperature of the surface of the earth during clear skies or the temperature of the cloud tops.

Additionally, cloud top temperatures of -15 degrees Celsius and warmer are typically dominated by liquid water. So temperatures that are in the range of yellow, pale green and sometimes light blue imply the potential for supercooled liquid water to exist in the clouds below, representing a significant airframe icing hazard.
14. IMAGERY

14.2.8 DOPPLER RADAR

The Doppler radar static images and loops are regional/sector depictions of the national NEXRAD mosaic built from the lowest elevation angle base reflectivity data. Looped images are 10 minutes apart over the most recent one hour period. The reflectivity presented on these images has limited filtering to remove non-precipitation returns. As a result, during the early morning and overnight hours, it is quite common to see a significant amount of ground clutter and anomalous propagation depicted on these images and loops.

14.2.9 PILOT WEATHER REPORTS

This includes the most recent pilot weather reports (PIREPs) of icing, turbulence and sky and weather over the contiguous U.S. using standard symbology. National and regional views are available for each of these three pilot weather report categories.
14. IMAGERY

14.3 Viewing an Image

View a image full screen by tapping on its thumbnail. View a list of recently-viewed images by tapping the Favorites/Recents button and tapping the Recents tab. The full screen view supports all the standard zoom and pan gestures, as well as rotation.

Dismiss the full screen image by tapping the Close button at the top left.

Tap the star at the top right to add the current image as a favorite.

14.4 Favorite Images

View all favorite images by tapping the Favorites/Recents button and tapping the Favorites tab.

Tap an image in the list to view it full screen.

The favorites list can be re-ordered by tapping the Edit button. Once in Edit mode, a three-bar icon is displayed to the right of each image in the list. Tap-and-hold on the three bar icon until the image row appears to lift up, then drag the row to the desired location in the list.

Delete an image from the favorites list using swipe-to-delete. Or, tap the Edit button and then the red circle icon beside the image. Then, tap the Delete button.

14.5 Sharing Images

Tap the Send To button in the bottom-right corner while viewing an image to save, email, or copy the image to your device’s clipboard. Saving the image adds it to your device’s Photos app so you can view it offline.
The Flights view is a form-based flight planning and flight plan filing tool. The Flights view can also be used to obtain weather briefings, and to generate a Navlog.

Flights are synced to your account and can be created and edited with an iPad, iPhone, or ForeFlight Web. Some features available on the Flights view may require a Performance Plus subscription.
15. FLIGHTS

15.1 Design

The Flights view is divided into two columns. The left column displays the Flights List which provides a summary of all flights associated with the account. The flight summary highlighted in blue is the selected flight and its details are presented in the right column. Tap a flight in the list to select it.

The right column contains the flight planning form. The form is organized with a top-to-bottom workflow from inputting airports, calculating Takeoff & Landing Performance, performing a Runway Analysis, selecting an aircraft, defining a route, entering payload and fuel details, and filing a flight plan.

The top of the view summarizes the flight and provides buttons for generating a Navlog, obtaining a Briefing, attaching files, and viewing flight notifications.

Only ForeFlight customers with a Performance tier plan can access the Files, Takeoff & Landing Performance, Payload, Fuel, Weights, and Fuel Order features.

15.2 Creating New Flights

There are seven methods for creating a new flight. These are described in detail later in this section. Those seven methods are:

- The new flight [+] button in the upper toolbar is tapped.
- A route is sent to Flights from the Maps page.
- Add Next Flight is tapped at the bottom of the Flights form.
- Copy Flight is tapped at the bottom of the Flights form.
- A flight is created with ForeFlight Web.
- A shared flight is accepted.
- A flight is assigned to you by a flight planner using ForeFlight Dispatch.

When a new flight is created, it is added to the flight list and synced to your account, even if no planning details have been entered. A flight planned on one device is available on all other devices signed into the same account (internet connection required).

**NOTE:** Some methods result in portions of the flight planning form being automatically completed.
15. FLIGHTS

15.2.1 Creating a New Flight
The new flight [+ ] button in the upper toolbar creates a blank flight, with some exceptions. If your account has a default aircraft, performance profile, and cruise altitude, those items are automatically populated. If defaults are not specified, the fields are left blank.

15.2.2 Sending a Route to Flights
You can send a route to the Flights page from Maps using the Send To button in the lower-right corner of the Maps Flight Plan Editor. Sending a route to Flights auto-fills all fields with the information you entered on the Maps view.

15.2.3 Adding the Next Flight
Add Next Flight creates a new flight using the previous flight’s destination, aircraft, and performance profile. For more information, see Add Next Flight.

15.2.4 Copying a Flight
Copy Flight is a button at the bottom of the flight planning form. Tapping this button copies all flight details except for the ETD. This button is useful for copying a shared flight since shared flights cannot be edited. For more information, see Copy Flight.

15.2.5 Shared Flights
Flights can be shared between accounts. When a flight is shared, either from another individual ForeFlight account or ForeFlight Dispatch, a tag is displayed at the bottom of the summary in the flight list. The tag depicts the name of the account that shared the flight. Flights shared from individual accounts are read-only and cannot be edited.

15. FLIGHTS

As updates are made to shared flights by the flight’s owner, the changes are reflected on the recipient’s device. Shared flights can be copied and edited however, edits to copied flights are not reflected on the original flight.

15.3 Flight Sharing

Once a flight has been created, it can be shared to the Maps, Plates, and Logbook views. Flights can also be shared with other pilots.

To share a flight, tap the Send To button in the upper-right corner of the Flights view. Tapping the button opens the Send To menu, where you can choose how to share the flight.

15.3.1 Sending a Flight to Maps

When the Map button is tapped, the Maps view opens with aircraft, performance profile, cruise altitude, ETD, and route details copied from Flights.

15.3.2 Sending a Flight to Plates

When Plates is tapped, a new Plates Flight Binder with the airport diagrams for the departure and destination airports is automatically selected.

15.3.3 Sharing a PDF

When Share PDF is tapped, a PDF copy of the flight’s Navlog and filing form is generated. Flight PDFs can be shared via email, text message, AirDrop, and third-party apps.

15.3.4 Sending a Flight to Logbook

When Logbook is tapped, a new logbook entry with the aircraft, departure and destination, route, and flight times is created.
15.3.5 Sharing a Flight

The Share Flight option allows you to send a flight to another ForeFlight account. Flights can be shared via email, text message, AirDrop, and third-party app.

When the flight’s recipient receives the shared flight, they must tap the share link to accept or deny the flight.

When a shared flight is accepted, it is displayed in the recipient’s flight list as a read-only flight. Any changes made to the flight by the flight’s owner are updated on the recipient’s device.

The recipient of a shared flight cannot make changes to the shared flight or share that flight with someone else. However, the recipient can copy the flight. The copied flight preserves all of the shared flight’s details except for the original aircraft and performance profile, which will instead use the recipient’s default aircraft and performance profile.

The recipient of a shared flight can delete a shared flight by swiping from right to left on the flight in the Flights list or by tapping Delete Flight at the bottom of the flight planning form. Once deleted by the recipient, the shared flight cannot be restored. However, the flight can be shared by the owner to the recipient again.

If the pilot who shared a flight tries to delete it, a warning advises that deleting the shared flight will also delete it from all recipients of that shared flight.

NOTE: If a flight is shared from a Performance tiered subscription to a recipient without a Performance plan, they will not be able to view the Navlog since the Navlog is dependent upon the plan type.
15. FLIGHTS

15.4 Deleting Flights

There are two methods for deleting flights.

- Swipe right to left on a flight in the Flights List and select Delete.
- Tap Delete Flight > Delete from the bottom of the flight planning form.

Deleted flights are removed from all devices signed into the account. If a flight is shared with another user, the flight is deleted from the recipient’s device when the person sharing the flight deletes it.

Deleted flights cannot be restored. There isn’t a requirement to delete a flight, however some users may elect to delete flights to reduce the amount of flights in the Flights list.

**CAUTION:** Do not delete a VFR flight plan that has been activated without first closing it. Deleting a Filed or Activated flight plan does not cancel or close the flight plan.
15. FLIGHTS

15.5 Flight List

The Flights list contains summaries for each flight. Flight summaries are sorted by departure time and grouped by month. It is not possible to change how flight summaries are ordered. Tapping a flight in the list makes it the active flight and displays its details in the flight planning form.

15.5.1 Flight Summary Layout

Each flight summary has a minimum of three rows. The summary is dynamic and updates as the flight is planned. If a summary item does not apply to the flight, it is omitted from the summary.

For example, a flight that is not shared does not include a shared flight tag. Similarly, a flight that has not been filed does not include filing status. For more information on filing status, refer to the ForeFlight Filing Guide available in Documents > ForeFlight.
15.6 Flight Planning Form

Flight details are displayed in the flight planning form. Details are automatically saved as edits are made. Some details, like the default aircraft, are automatically populated when a new flight is created. However, all flight details are editable at any time.

The following sections describe each component of the flight planning form, starting from the top down.

![Blank Flight Planning Form](image-url)
15.6.1  Error Messages

When ForeFlight detects an issue with your flight plan, a persistent banner displays at the top of the view. The banner is either red (warning) or yellow (caution). If multiple errors exist, tap the banner to display error details. To clear error messages, edit the flight plan according to the error message.

Caution Messages

Caution messages are displayed for problems that prevent ForeFlight from calculating flight planning results (e.g., selecting a cruise altitude that’s too high for a short route given the aircraft’s performance capabilities).

Warning Messages

Warnings are displayed when weight or capacity limits are exceeded.

CAUTION: Errors do not prevent flight plans from being filed. However, reviewing all errors messages prior to filing is recommended.
15.6.2 Flight Performance Summary

At the top of the flight planning form is a summary of key planning results that allows you to quickly evaluate a flight. The summary is always visible and is blank until enough details are entered to calculate results.

The Flight Performance Summary is calculated by evaluating the route between the departure and destination airports using the selected aircraft’s performance profile and forecast wind. Flight time and fuel required to the alternate airport is *not* included in the summary.

**Flight Fuel**

The Flight Fuel Summary includes the fuel required to start, taxi, take off, and fly to the destination. Start, taxi, and takeoff fuel is specified in the aircraft profile and can be manually edited on the Flights page with a Performance Plus account. Flight fuel does not include fuel required for an alternate or any reserve, extra, or contingency fuel.

**Wind**

The wind component in the flight summary is an average of the wind across the duration of the flight.

**Refreshing the Summary**

The Flight Performance Summary is automatically updated each time the flight is edited. The summary does *not* automatically update as new weather forecasts are issued.

To manually update the performance results with the latest forecast conditions, tap the **Refresh** button near the bottom right corner. The time the calculations were completed is displayed at the bottom of the summary.
15.7 Navlog, Briefing, Files, and Notifications

Navlog, Briefing, Files, and Notification buttons are available at the top of the flight planning form. Files is a Performance-tier feature and will be hidden from view unless signed into a Performance Plus, Business Performance, or MFB Performance account.

15.7.1 Navlog

The Navlog button opens a full-screen detailed Navlog view. Internet connectivity is required to generate a Navlog. The Navlog includes a summary, flight planning results by leg, winds aloft, and departure/destination airport information.

The Navlog can be shared and printed by tapping the share button in the upper-right corner of the Navlog view. Navlogs are also available on ForeFlight Web. Navlogs generated on the web will automatically become available on ForeFlight Mobile and vice versa.

Navlog Differences

There are two versions of the standard Navlog. Basic Plus and Pro Plus customers share one version and Performance-tier customers receive the other version. The Performance-tier Navlog includes additional fuel-related planning details and RAIM forecasting.

Performance-Tier Navlog Templates

Performance-tier accounts have a second (International) Navlog template to choose from. To choose a different template with a Performance account, tap the settings (gear) button in the upper toolbar when viewing a Navlog.
15. FLIGHTS

**Basic Plus and Pro Plus Navlog**

The Navlog below is representative of a Navlog generated from a Basic Plus or Pro Plus account.
Performance Plus Navlog

The Navlog below is representative of a Performance-tier account. Information that’s only available with a Performance Navlog are circled in red.

![Navlog Image]

**NOTE:** RAIM prediction only provided for U.S. domestic flights. Global RAIM prediction available with a ForeFlight Dispatch license.
15. FLIGHTS

15.7.2 Briefing

Briefings can only be obtained from the Flights page. There are two briefing formats, HTML and PDF. The classic text briefing is no longer supported. See the Briefings chapter for additional information.

15.7.3 Files

ForeFlight Performance-tier subscribers can add files to flights. Files sync between the devices signed into the same account. Files added to a flight are available offline. Files are associated with flights indefinitely provided the flight is not deleted.

Supported File Types and Size Limits

Flight files support the formats listed below. Individual file attachments are limited to 25 MB or less.

- PDF
- TIFF
- TIF
- JPG
- JPEG
- GIF
- PNG
- BMP
- BMPF
- TXT
- DOC
- DOCX
- XLSX
- XLS
- PPT
- CSV
- Pages
- Key
- Numbers
15. FLIGHTS

Adding Files to a Flight

To add a file to a flight, tap the Files button at the top of the flight planning form. Then, tap the [+] button in the upper toolbar to add files. Files can be added from Photos, ForeFlight Documents, or the device’s iOS Files app. Select where the file will be imported from and then choose the file to attach to the flight.

Files can also be imported with AirDrop. To import via AirDrop, select ForeFlight > Flights from the AirDrop “Open with…” menu. Once a file has been added, the Files button depicts the number of files currently attached to the flight.

Editing Files

To edit a file, tap the file thumbnail to open the file viewer. Tap Edit to annotate, rename, or delete the file. Not all file types are able to be annotated.
15. FLIGHTS

15.7.4 Flight Notifications

Flight notifications provide hazardous condition details for your route of flight. Flight notifications are only available after filing a flight plan. When unread flight notifications are available, the number of notifications are depicted as a badge on the Flights button, in the flights list, and at the top of the planning form.

Flight Notification Types

Flight notifications are issued for the following hazardous conditions:

- Temporary Flight Restriction (TFR)
- Runway or Airport Closure
- Unsafe NOTAMs
- Urgent PIREP
- SIGMETs
- Convective SIGMETs
- AIRMETs
- Center Weather Advisories
- Severe Weather Watches/Warnings

Flight notifications are obtained from multiple sources, including Lockheed Martin’s Adverse Conditions Alerting Service (ACAS). Flight notifications do not include flight plan messages (e.g., expected routes, expected departure clearance times). The flight notification count decreases as notifications are viewed. When viewing notifications, tap the checkmark in the upper toolbar to mark all notifications as read.
15.8 Departure and Destination

The Departure / Destination section specifies the flight’s departure time, departure location, destination, and alternate airport.

Pilots planning with a Performance-tier account and a supported piston-engine aircraft can also calculate Takeoff & Landing Performance from this section. Customers with a Runway Analysis license for a supported turbo-prop or jet aircraft can access Runway Analysis performance data from this section.

15.8.1 Departure Time

The Departure Time field specifies the flight's estimated departure time for planning and filing purposes. When creating a new flight, the ETD is set to approximately ten minutes from the current time (rounded to the nearest five-minute interval).

The date field uses the format (e.g., month/day/year) based on the iPad or iPhone’s region setting. Region settings can be located in the iPad or iPhone Settings app > General > Language & Region.

ETD/ETA

The ETD/ETA buttons are a Performance-tier features that determine whether the selected date/time represents the beginning or end of the flight. Select ETD to set the date/time as the departure time, and ForeFlight will calculate the flight’s arrival time. Select ETA to set the date/time as the arrival time, and ForeFlight will calculate the departure time required to arrive at the selected time.
15. FLIGHTS

15.8.2 Departure

The Departure field specifies the departure location for the flight. The departure field supports ICAO identifiers, user waypoints, coordinates, and place/bearing/distance entries. If the departure location is something other than a published ICAO identifier, ForeFlight will convert the location to coordinates when filing.

**PDC**

When planning to depart from an airport that supports pre-departure clearances (PDC), a PDC tag is displayed to the right of the Departure label. PDC is a Performance-tier feature and is not displayed on Basic Plus or Pro Plus accounts.

**Takeoff Performance and Runway Analysis**

When planning a flight with a Performance-tier account and a supported piston engine aircraft (or a jet or turbo-prop with a Runway Analysis license), a Takeoff button appears if runway data is available. The Takeoff button opens a split-screen Takeoff Performance or Runway Analysis view.

**Airport Info**

Once an airport is selected, an Info button appears to the left of the airport identifier. Click Info to display the airport pop-up menu to find detailed information about the airport.
15. FLIGHTS

15.8.3 Destination

The Destination field specifies the flight’s destination. The field supports ICAO identifiers, user waypoints, coordinates, and place/bearing/distance entries. If the location is something other than a published ICAO identifier, ForeFlight will convert the location to coordinates when filing.

Landing Performance and Runway Analysis

When planning a flight with a Performance-tier account and a supported piston engine aircraft (or a jet or turbo-prop with a Runway Analysis license), a Landing button appears if runway data is available. The Landing button opens a split-screen Takeoff Performance or Runway Analysis view.

Airport Info

Once a destination airport is selected, an Info button appears to the left of the airport identifier. Click Info to display the airport pop-up menu to find detailed information about the airport.
15.8.4 Alternate

The Alternate field specifies the alternate airport for flight planning and filing purposes. Tapping the Alternate field opens the Alternate Advisor in a pop-up window.

**Alternate Advisor**

The Alternate Advisor suggests alternate airports based on several variables such as time and fuel requirements, forecast weather conditions, available approach procedures, and whether you have previously selected that airport as an alternate on flights with the same destination. To enter an alternate airport, not in the suggested list, tap **Airport Code** and type your desired alternate airport.

The Alternate Advisor map shows each alternate with a grey line between it and the destination airport. Tap an alternate airport to highlight the route from your destination to the alternate. Tap the **Add Airport** button at the bottom of the Alternate Advisor to select it as the alternate.
15. FLIGHTS

Alternate Advisor Performance Calculations

Time and fuel calculations to the alternate airport are based on a direct route from your destination airport to the alternate using the same performance profile as the rest of the flight and a cruise altitude appropriate to the distance to the alternate.

Alternate Airports with a Dispatch license

Flights planned with a ForeFlight Dispatch license include an option to specify multiple alternate airports. With a Dispatch license, each segment of flight to the alternate airport can specify a unique performance profile, routes, and cruise altitude.

ForeFlight Mobile Alternate Airports (Dispatch)
15. FLIGHTS

**Specifying Alternate Routes and Performance Profiles**

To specify a unique route or cruise profile to the alternate airport with a Dispatch license:

1. Tap one of the alternate fields.
2. Select an alternate airport.
3. Tap **Select Options**.
4. Specify a route manually or use the Route Advisor.
5. Specify an altitude to the alternate airport.
6. Select a cruise profile.
7. Tap **Add as Alternate**.

---

**Alternate Route options with ForeFlight Dispatch**
15. FLIGHTS

15.9 Aircraft

The Aircraft section specifies the aircraft and performance profile for the flight.

Selected Aircraft and Performance Profiles

15.9.1 Aircraft Profile

When creating a new flight, the aircraft field is automatically populated with the default aircraft. If no default aircraft is specified, the aircraft from the last flight is automatically populated. If no prior flights exist, the aircraft field is blank.

To select an aircraft profile, tap the aircraft field and choose an aircraft from the list. Aircraft profiles can be edited from the Flights page by tapping Edit when viewing the list of aircraft profiles. For more information on aircraft profiles, see the Aircraft chapter.

15.9.2 Performance Profile

When creating a new flight, the performance profile is automatically populated with the default profile for the selected aircraft. To select a different performance profile, tap the selected profile and choose a different one from the list (if applicable).

Performance profiles can be edited from the Flights page by tapping Details when viewing the list of performance profiles. For more information on performance profiles, see the Performance section of the Aircraft chapter.
15. FLIGHTS

15.10 Route

The Route section displays flight rules, an interactive map, the elements of your route, and your cruise altitude.

15.10.1 Flight Rules

The Flight Rules field is automatically populated when a flight is created by evaluating your route and cruise altitude. When creating a new flight, the default aircraft’s default cruise altitude (specified in the aircraft profile) determines the flight rules. For example, if the default aircraft’s default cruise altitude is 5,500 ft, new flights will automatically populate with VFR flight rules.

Cruise altitudes that are divisible by 1000 result in the IFR flight rule automatically being selected. Planning with a VFR altitude (altitude which is divisible by 500) results in the VFR flight rule automatically being selected.
15. FLIGHTS

Routes that contain a flight rule change will automatically result in the appropriate composite flight rule (Y or Z).

Once a flight rule has been assigned, it will only update automatically if selecting a new route from the Route Advisor. Manually editing the route or changing the cruise altitude does not update the flight rule.

Flight rules can be manually changed at any time regardless of the planned route or cruise altitude. To change the flight rule, tap the current one and select a new one from the pop-up menu.

NOTE: DVFR and VFR (DC SFRA) flight rule types are not automatically selected.

15.10.2 Interactive Map

The Route section contains an interactive map. Tap the map to expand it. Once expanded, the map can be panned and zoomed. Tap the button in the lower-left corner of the map to recenter the map on the route.

The map’s color is determined by the Aeronautical Map Theme setting (Classic, Light, or Dark).

The map displays the route, aeronautical map, and composite radar layer. The aeronautical map elements cannot be filtered and additional map layers cannot be added.

3D Preview

The planned route can be previewed in 3D with a Performance tiered account. To preview the route, tap the 3D button on the map before expanding it.
15. FLIGHTS

15.10.3 Route

The Route field displays the planned route. There are two methods for planning a route. Using the Route Advisor or manually editing a route.

*Route Advisor (Recommended)*

To plan a route using Route Advisor, tap Routes (x) whereas “x” represents the number of available routes for the airport pair. Route Advisor opens in a pop-up window with a list of potential routes that you can select for the pair of departure and destination airports.

*Manual Editing*

To manually edit a route, tap the Route field and use the keyboard to customize the route. Route elements are separated by a space.

```
Route
ZMSKL V477 CQY V15 BYP V124 PRX V315 PGO V13 RZC T411 BUM V13 DSM T397 ALO T251 ZEZDU
```

Routes (1)

15.10.4 Cruise Altitude

The cruise altitude field opens the Altitude Advisor which displays the forecast winds aloft at various altitudes. To select a cruise altitude, tap the current altitude then select a new one from the Altitude Advisor pop-up menu.
15. FLIGHTS

15.11 Payload

Payload is a Performance-tier feature that is used for planning weight and balance. This section permits two planning methods. The first method allows you to calculate weight and balance quickly using average weights. The second method integrates the aircraft’s weight and balance profile for more detailed planning.

When a new flight is created, the payload section only contains three editable fields (cargo, people count, and average weight). These fields provide basic weight planning functionality. Detailed weight and balance planning can be done from the Flights view by tapping **Weight and Balance** at the bottom of the Payload section. The weight and balance button opens the weight and balance view and integrates the information into the flight.

<table>
<thead>
<tr>
<th>PAYLOAD (LBS)</th>
<th>COUNT</th>
<th>AVG WT.</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>People</td>
<td>3</td>
<td>175</td>
<td>525</td>
</tr>
<tr>
<td>Cargo</td>
<td></td>
<td></td>
<td>125</td>
</tr>
<tr>
<td><strong>Total Payload</strong></td>
<td></td>
<td></td>
<td><strong>650</strong></td>
</tr>
</tbody>
</table>

Payload Section - Basic Planning

15.11.1 People

When a new flight is created, the People field initially contains two editable values (count and average weight). The default value for the number of people is either 1 or 2, based on the minimum crew requirement for your aircraft.

The starting default value for the average weight is 200 pounds. The average weight is editable. If the average weight is adjusted, the adjusted amount is carried forward to subsequent flights. Total people weight is calculated by multiplying the people count by the average weight.
15. FLIGHTS

15.11.2 Cargo

When a new flight is created, a single editable field exists for entering cargo weight. The default cargo weight is zero. Tap the total cargo weight to edit it manually.

15.11.3 Weight and Balance

The Weight and Balance button is displayed at the bottom of the Payload section with a Performance-tier account. When the button is tapped, the Weight & Balance view is opened. This view is used to enter detailed payload and fuel information. After entering payload information, tap Back in the upper toolbar to return to the Flights view.

After returning to the Flights view, the weight and balance is integrated into the flight (e.g., fuel entered in Weight & Balance is copied to the Fuel section of Flights). For more information, refer to the ForeFlight Weight & Balance guide in Documents > ForeFlight.

![Integrated Weight and Balance](image-url)
15.12 Fuel

The Fuel section is only available with a Performance tier account and contains a fuel policy selector and a fuel table. The fuel policy determines how much total fuel is required at start. The fuel table is divided into three sections.

- **Total Start** fuel is determined by the selected fuel policy.
- **Flight Fuel** is the sum of taxi fuel and the fuel to the destination.
- **Fuel at Landing** is the total amount of fuel in the tanks upon landing at the destination. In other words, it’s the sum of the alternate fuel, reserve fuel, and extra fuel.

Fields that are displayed with blue text can be manually edited. Values in the Fuel section are copied to the weight and balance and filing form.

```
<table>
<thead>
<tr>
<th>Fuel Policy Selector</th>
<th>Flight Fuel Section</th>
<th>Landing Fuel Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel at Start</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flights Fuel Section</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```

![Fuel Table Image]

ForeFlight Mobile Pilot’s Guide 330
15. FLIGHTS

15.12.1 Fuel Policy

The Fuel Policy section lists different options for calculating fuel at start. There are five options to choose from. The Minimum Fuel Required policy is the default and cannot be changed.

Manually editing fuel at start, fuel at landing, or extra fuel will change the fuel policy automatically. The available fuel policies are explained below.

- **Minimum Fuel Required** is a calculated value that determines the minimum amount of fuel required for taxi, flight, flight to alternate (if specified), and reserve. The default amount of reserve fuel is determined by the aircraft profile.

- **Extra Fuel** is a user-defined amount of fuel over the minimum fuel. Extra fuel is listed at the bottom of the Fuel section and can be added anytime. If extra fuel is manually added by tapping the Extra Fuel field, the Extra Fuel policy is automatically selected.

- **Maximum Fuel** is a calculated value based on the maximum amount of fuel the aircraft can hold without exceeding weight or capacity limits. When maximum fuel is selected, fuel over what is minimally required is added to the extra fuel field.

- **Landing Fuel** is a user-defined amount of fuel that calculates how much fuel is needed at the start to land with the user-defined amount. If the Fuel at Landing field is manually edited, the Landing Fuel policy is automatically selected. Entering a landing fuel that is less than the aircraft’s default reserve fuel plus the amount needed to fly to the alternate results in error.

- **Manual Fuel** is a user-defined amount of fuel at start. Editing Start Fuel results in the manual fuel policy being automatically selected.
15. FLIGHTS

15.12.2 Fuel Table

The Fuel table provides a detailed breakdown of the fuel required for the flight. Fields that can be edited are highlighted blue. Fuel amounts are given in two columns (weight and volume).

1. Selected Fuel Policy.
2. Quick access button for selecting Minimum Fuel policy.
3. Quick access button for selecting Maximum Fuel policy.
4. Start Fuel. Can be automatically calculated or user-specified.
5. Flight Fuel is the sum of fuel to the destination plus taxi fuel.
6. Taxi Fuel is the fuel required for start, taxi, and takeoff. Specified in aircraft profile. Can be overwritten (e.g., for extended taxi scenarios).
7. Fuel to Destination is the fuel required for flight from departure to destination as calculated using the selected aircraft’s performance profile.
8. Fuel at Landing is the total of alternate, reserve, and extra fuel. Also equal to start fuel minus flight fuel (taxi + fuel to destination).
10. Reserve Fuel is determined by the aircraft profile and can be overwritten.
11. Extra Fuel is a user-defined amount of fuel in excess of what is minimally required.
15. FLIGHTS

15.13 Weights

The weights section provides a detailed breakdown of weights during four phases of flight.

- **Zero Fuel Weight** equals the aircraft's basic empty weight plus its payload.
- **Ramp Weight** equals the zero fuel weight plus total fuel at start.
- **Takeoff Weight** equals ramp weight minus taxi/takeoff fuel.
- **Landing Weight** equals takeoff weight minus the fuel to destination.

Each phase of flight includes three weights: the planned weight, maximum weight, and the available weight for the phase of flight. Planned and maximum weights are displayed on the right side of the table (e.g., 4,481 / 5,500). Available weight is displayed on the left side of the table and calculated by subtracting the maximum weight by the planned weight.

If a weight limit is exceeded, the text is changed to red and an error message is displayed at the top of the flight planning form.

Collapse the zero fuel, ramp, or takeoff weight section by tapping the arrow on the left side of the table.
15. FLIGHTS

15.14 Destination Services

The Destination Services section is an optional section and can be used to display FBO information. As described below, customers with a Performance tiered account can order fuel from this section when Fuel Orders are enabled in More > Settings.

15.14.1 FBO Information

When planning with Flights, you can optionally select an FBO. Selecting an FBO adds quick-reference information to the flight planning form and Navlog.

To select an FBO:

1. Tap the top row of the Destination Services section
2. Review the available businesses.
3. Tap an FBO to select it.
15. FLIGHTS

The FBO list displays frequencies, phone numbers, services, and the latest fuel prices. To see additional FBO information, including photos, user-submitted comments, and contract JetFuelX prices, tap **Details**. To select that FBO for the flight, tap **Select FBO** at the bottom of the screen. You can also select and deselect FBOs by tapping them in the list.

Selecting an FBO adds its details to the Flights form and Navlog. When you select an FBO, ForeFlight will automatically select the same FBO for subsequent flights to the same airport.

**FBO Quick Action Buttons**

Once an FBO has been selected, its frequency and lowest available fuel prices are displayed on the Flights form along with four buttons. The phone button initiates a phone call to the FBOs primary phone number (requires iPhone). The mail button opens a new email to the FBOs primary email address. To view additional FBO information, tap the information button to the right of the email button.
15. FLIGHTS

15.14.2 Fuel Orders

The Fuel Order option allows Performance Plus customers to order Full-Service fuel via email (internet connection required). To enable this feature, tap More > Settings and toggle Enable Fuel Orders.

To create a fuel order, tap Fuel Provider and select an FBO at the destination airport. If you have added fuel cards in JetFuelX, you can tap Fuel Card to select an available fuel card and receive discounted prices at that FBO. Each fuel card includes the discounted price, the fuel card provider, a link to view any notes for the fuel card, and price tiers if they are available with that card. The retail price of fuel at that FBO is shown at the top of the page for reference.

If the fuel card you selected supports fuel releases at that FBO, a new option appears to send a fuel release as part of the fuel order. Doing so will notify the fuel card provider in addition to the FBO, allowing them to release the fuel so it’s ready and paid for when you arrive. If you choose to not use a fuel release, or the fuel card doesn’t support them, you can still send the fuel order to the FBO without it.

ForeFlight automatically populates the Quantity field with the amount of fuel that needs to be added after the flight to reach max capacity, based on the Fuel at Landing value in the Fuel section of the Flights Planning form.

Tap on the numbers for LBS or GAL to change this value as desired. Changing one number automatically updates the other. Alternatively, enter 1 in the GAL field for “captain’s discretion”, and you can decide on the fuel quantity after you've landed at your destination.

The Price field indicates the price per gallon of fuel, using either the retail price or your contract fuel price if you selected a fuel card. Below that, you can set your FBO Arrival and Departure times and select whether you want to load the fuel on Arrival or
15. FLIGHTS

Departure. If you want to add any special comments or requests to your fuel order, you can do so at the bottom.

**Fuel Order Email**

The emailed fuel order sent to the FBO includes information about the order and a button for them to confirm receipt of the fuel order. If the FBO accepts the fuel order, the Order status in ForeFlight changes from **Sent** to **Confirmed**.

![Emailed Fuel Order](image)

**Emailed Fuel Order**

After sending a fuel order, the **Send** button changes to **Cancel**. Clicking this will send another email to the FBO informing them that you canceled the order. If the fuel order email is not successfully delivered to the FBO, such as if the FBO's firewall rejects it or the FBO's email account no longer exists, the fuel order status will show **Not Delivered**.

The email may not reach the FBO and instead trigger the Not Delivered message in some circumstances, such as if the email is automatically placed in the FBO's spam folder.
15. FLIGHTS

15.15 Flight Log

The Flight Log section allows pilots to record fuel remaining at shutdown and flight-related times. Information in this section can be shared with the ForeFlight Logbook.

![Flight Log]

15.15.1 Fuel at Shutdown

The remaining fuel at shutdown can be logged in the Flight Log section. Fuel at shutdown is not copied to the next flight or any other ForeFlight features. Fuel at shutdown allows pilots to compare flight planning results with actual results. The fuel at shutdown unit (e.g., gallons, kilograms, etc) is set with the aircraft profile > fuel unit setting.

15.15.2 Times

The Times section allows pilots to record flight meter time (e.g., hobbs and tach meters), flight time, and block time. If the start and end times required to calculate a value have not been entered, the time field will display “Logged”.

Flight Meter Time

The Flight Meter section contains three rows, **Start**, **End**, and **Total**. These rows are intended to log starting and ending hobbs or tach time. Once a start and end time are entered, the total time is automatically calculated. Flight Meter time is *not* currently copied to Logbook.
15. FLIGHTS

**Flight Time**

Flight time is the difference between **Time Off** and **Time On** and is automatically calculated. You can log this time by sharing the flight with Logbook.

Remember to share your flight with Logbook if you want to log the flight time. The Flights view and Logbook do not automatically sync. Adding flight time after a flight has been shared to the Logbook or editing flight time in the Logbook does not update the time in both Flights and Logbook. Flight time is only copied to Logbook when the flight time is entered and then the flight is shared.

**Block Time**

Block time is the difference between **Time Out** and **Time In** and is automatically calculated. Remember to share your flight with Logbook if you want to log the block time. The Flights view and Logbook do not automatically sync. Manually updating one does not automatically update the other. Adding block time after a flight has been shared to logbook or editing block time in the logbook does not update the time in both Flights and Logbook. Block time is only copied to Logbook when the time is entered and then the flight is shared.

15.16 Pack

Pack provides a method for downloading all charts, weather, NOTAMs, and fuel-price data needed for the planned route. Pack can be accomplished from the Maps or Flights pages. For more information, see the Pack section.

15.17 Add Next Flight

The **Add Next Flight** button creates a new flight and copies pertinent details. Add Next Flight sets the destination airport of the previous flight as the departure airport of the new flight, and sets the new flight’s ETD to 30 minutes after the ETA of the previous flight, if that time has not already passed. Add Next Flight preserves the first flight’s aircraft and performance profile, payload details, and fuel policy, though if the selected fuel policy requires user input (such as Extra Fuel, Landing Fuel, and Manuel Fuel) then the previous value will not be preserved when adding a next flight.
15.18 Copy Flight

The **Copy flight** button can be used to duplicate a flight you need to plan again. Copying a flight is also useful when a flight is shared with you. Shared flights cannot be edited, however they can be copied and then edited.

Copying a flight is the preferred method for planning a flight with the same route and aircraft instead of editing an old flight. Editing a flight that has been previously published or filed can cause unintended consequences.

**Note:** When needing to plan the same flight multiple times, use the **Copy flight** function.

15.19 Delete Flight

The **Delete Flight** button is used to delete the selected flight. When tapped, a confirmation pop-up is displayed. Tap the confirmation pop-up **Delete** button to permanently delete the flight. Deleted flights cannot be recovered.

15.20 Proceed to File

The **Proceed to File** button opens the filing form. The filing form is automatically populated with the fields from the flight planning form and is used to file a flight plan. For information on filing flight plans with ForeFlight, see the ForeFlight Filing Guide in **Documents** > **ForeFlight** or online at [www.foreflight.com/filing-guide](http://www.foreflight.com/filing-guide).
Runway Analysis is an optional Takeoff and Landing Analysis tool for select single and multi-engine jet and turboprop aircraft. At its core, Runway Analysis determines the maximum weight an aircraft can operate given the selected runway, aircraft configuration, and weather conditions.

When planning with a multi-engine aircraft, Runway Analysis evaluates the flight using one-engine inoperative (OEI) performance data, ensuring that you can safely operate in the event of an engine failure.

Runway Analysis is designed to meet the guidelines and requirements of Advisory Circular 120-91A and CFR14 part 135.379. Runway Analysis is also EASA and CASA compliant when the slightly larger ICAO Obstacle Corridor is selected.
16. RUNWAY ANALYSIS

16.1 Purchasing Runway Analysis

Runway Analysis requires a Performance tier subscription and paid add-on Runway Analysis license. When purchased, Runway Analysis is integrated into the ForeFlight Mobile Flights view. Runway Analysis is also available on the web when a ForeFlight Dispatch license is purchased.

Runway Analysis can be purchased by signing into www.plan.foreflight.com/account/subscription/aircraft. To add Runway Analysis, select the Runway Analysis Buy button for the appropriate aircraft from the bottom of the screen.

Customers with Basic Plus, Pro Plus, Business Pro, or MFB Pro plans must first upgrade to a Performance tier plan before adding Runway Analysis.

16.1.1 Purchasing Runway Analysis for Individuals

Runway Analysis is available to individual customers as a per-type add-on. Visit www.foreflight.com/products/runway-analysis-individual for aircraft availability.

16.1.2 Purchasing Runway Analysis for Business

16. RUNWAY ANALYSIS

16.2 Configuring Runway Analysis

When a Runway Analysis license is purchased for an aircraft type with an individual Performance Plus plan, a Supports Runway Analysis label is added to each type variant that supports Runway Analysis.

To verify support, select More > Aircraft and choose an aircraft profile. Tap the aircraft type field and look for the Supports Runway Analysis label. If the label is missing, either the variant is not yet supported, or a Runway Analysis license has not been purchased for the aircraft type.

Runway Analysis is licensed to Business and Military Flight Bag (MFB) customers on a per aircraft profile basis. As a result, the Supports Runway Analysis label is not displayed when using one of these accounts.
16. RUNWAY ANALYSIS

16.2.1 Runway Analysis Settings

When a Runway Analysis license is purchased, two configurable fields are to the aircraft profile’s Performance section.

**Runway Profile**

The Runway Profile field specifies the serial number, weight limit, or special equipment for which the Runway Analysis data is applicable. If more than one profile exists for the aircraft type, tap the **Runway Profile** setting and choose the correct version for your aircraft.

![Runway Profile - EMB 500](image)

**Field Performance**

The Field Performance settings specify the aircraft’s default takeoff and landing configuration. These settings are unique to the aircraft type and are populated with information from the aircraft flight manual.

The default settings can be adjusted from the aircraft profile. Edits to the aircraft profile’s default configuration affect subsequent flights. Takeoff and landing configuration can also be adjusted on a per-flight basis using the Aircraft Configuration section of the Takeoff or Landing Analysis view.
Field Performance settings are broken into two sections (Takeoff and Landing). Settings can be edited by tapping the appropriate field and selecting another option from the drop-down menu.

The settings and drop-down menus only contain options that are specified in the aircraft flight manual (e.g., Takeoff Flaps may only have options for 10º and 20º). It is impossible to set a value if it is not included in the flight manual.

The flight manual revision used to populate field performance settings is listed at the bottom of the menu (e.g., AFM Revision Level: Rev 11).
16. RUNWAY ANALYSIS

Field Performance Definitions

Settings available in the Field Performance menu depend on your aircraft type. However, the following Runway Analysis-specific settings are always present. Those settings are discussed below.

- **Obstacle Corridor** sets the flight path’s obstacle accountability corridor to either the FAA specification from AC 120-91A or the slightly wider corridor defined by ICAO requirements. This setting is only applicable to multi-engine aircraft.

- **Landing Factor** is a variable (e.g. 1.25) by which the calculated landing distance is multiplied to produce a Factored Distance. The Landing Factor is similar to a safety buffer that is generally used to account for wet or dry runway conditions. Commonly used factors and their equivalent runway surface conditions include:
  - 60% Dry Conditions: 1.67
  - 80% Dry Conditions: 1.25
  - 60% Wet Conditions: 1.92
  - 80% Wet Conditions: 1.44
16. RUNWAY ANALYSIS

16.3 Conducting Takeoff Analysis

Takeoff Analysis is accessed from the Departure / Destination section of the Flights view. Takeoff Analysis determines the maximum weight an aircraft can depart in the event of an engine failure (multi-engine aircraft) or the total distance required to perform the takeoff (single-engine aircraft).

To conduct an analysis, enter the flight’s route, payload, and fuel details into the Flights view. After entering details, tap the Takeoff button to open the Takeoff Analysis view. Results are calculated when a runway is selected.

The Takeoff or Landing button may be hidden under the following conditions:

- The selected aircraft does not support Runway Analysis.
- A Runway Analysis license for the aircraft has not been purchased.
- A non-performance tier account is being used to plan the flight.
- Runway data for the airport is unavailable.
16. RUNWAY ANALYSIS

16.3.1 Takeoff Analysis View

The Takeoff Analysis view is organized into sections. At the top of the Takeoff Analysis view, a Performance Summary displays key performance metrics for quickly evaluating a takeoff.

Each Takeoff Analysis section is described in detail throughout this chapter.

**Takeoff Analysis Sections**

- Performance Summary
- Destination Runway
- Obstacle Analysis (multi-engine only)
- Weather
- Aircraft Configuration
- Performance

**Takeoff Analysis Default Data**

When planning a new flight, Takeoff Analysis is automatically populated with the latest runway data, current (or forecast) weather, and default aircraft configuration.

Each field in blue text can be edited from this view to plan hypothetical conditions or circumstances that are unique to the flight.

For example, if the runway’s usable length has changed due to construction, you can manually edit the runway’s length to represent current conditions.
16. RUNWAY ANALYSIS

16.3.2 Multi-Engine Takeoff Analysis

When planning with a multi-engine aircraft, Takeoff Analysis determines if the aircraft can perform (or abort) a takeoff in the event of an engine failure. If an aircraft cannot perform (or abort) a takeoff at the maximum gross weight, Runway Analysis will determine the maximum takeoff weight (MTOW) that it can.

Takeoff Analysis does not provide all engine operating (AEO) results for multi-engine aircraft.

**Multi-Engine Takeoff Analysis Constraints**

When analyzing a takeoff, multiple aircraft performance and environmental constraints are evaluated to ensure the aircraft can depart (and abort) in compliance with the selected (FAA or ICAO) obstacle corridor standards (specified in the aircraft’s Field Performance settings). Constraints that are evaluated include:

**Aircraft Performance Constraints**

- Climb Gradient
- Takeoff Distance
- Stopping Distance
- Braking Energy
- Tire Speed Limits

**Environmental Constraints**

- Wind
- Temperature
- Available Runway Distance
- Surface Conditions
- Obstacles

**Determining Maximum Takeoff Weight**

When an aircraft cannot perform an OEI takeoff at the aircraft’s maximum structural takeoff weight, Takeoff Analysis calculates a unique maximum takeoff weight (MTOW) for the flight by reducing the MTOW until all constraints are satisfied or the takeoff is deemed impossible.

For example, when planning operations from a short runway, the MTOW is reduced so that the distance required to accelerate and stop is less than the runway’s accelerate and stop distance available (ASDA). In this example, available runway distance is the constraint that limits the aircraft from departing at its maximum structural weight. If a longer runway were selected, the MTOW would increase if there were no other limiting constraints.
16. RUNWAY ANALYSIS

Identifying the Limiting Constraint

Takeoff Analysis displays the MTOW and limiting constraint for the flight at the bottom of the Performance Summary. There are ten potential limiting constraints (see below).

Limiting Constraints

Variables that have the potential to limit the maximum takeoff weight or render the takeoff impossible are listed below. When a constraint limits the maximum takeoff weight (MTOW), the text in bold is displayed at the bottom of the performance summary, followed by the word “Limited” (e.g., Runway Limited).

- **Structural Weight** is the maximum weight for the aircraft type defined by the aircraft flight manual. If an aircraft is not limited by performance or environmental constraints, MTOW is determined by the aircraft’s structural weight limit.

- **Obstacles** along the flight path can limit MTOW or deem a takeoff impossible. An aircraft must be able to clear all obstacles along the flight path by the selected FAA or ICAO lateral and vertical distance. If an aircraft cannot clear all obstacles, MTOW is reduced until takeoff is deemed possible.

- **Runway** length can reduce MTOW and deem a takeoff impossible. The aircraft must be able to takeoff or abort, given the available runway distance. If takeoff or abort distances exceed available runway, MTOW is reduced until takeoff is deemed possible.

- **Climb** gradient can reduce MTOW or deem a takeoff impossible. The aircraft must achieve the minimum climb gradient as required per the aircraft’s certification rules. The climb constraint does not factor in obstacles.

- **Temperature** can not exceed the aircraft flight manual’s published temperature limits.

- **Wind** cannot exceed the aircraft flight manual’s published wind limits.
16. RUNWAY ANALYSIS

- **Brake Energy** required to stop the aircraft cannot exceed the published limits. This constraint is most common with downslope runways or departures with a tailwind.

- **Tire Speed** cannot exceed the aircraft flight manual’s published limits.

- \( V_{MC} \) is the minimum ground control speed or \( V_{MCG} \). \( V_1 \) cannot be lower than the published minimum control speed.

- **AFM Data** limits exist when data interpolation is not possible. When an AFM Data limit is applicable, Runway Analysis uses the next available lower value. For example, if the planned takeoff weight is 18,500 lbs, yet performance data only exists for 20,000 lbs and 15,000 lbs, Takeoff Analysis will limit MTOW to 15,000 lbs and the performance summary will indicate AFM Data Limited.

**Takeoff Impossible Error**

If Takeoff Analysis determines the planned takeoff weight exceeds the maximum takeoff weight for the conditions, the flight is deemed impossible and an error banner is displayed near the top of the Takeoff Analysis view. To clear the Takeoff impossible error, try the following suggestions.

- Select a different runway or a different Engine Out Procedure.
- Reduce Start Fuel or Payload.
- Plan a shorter leg (results in reduced fuel load).
- Select a more fuel efficient en route performance profile.
- Manually edit winds or temperature to determine if departing under different conditions results in a possible takeoff.

**NOTE:** If you selected the Maximum Fuel Policy on the Flights view and the Takeoff Analysis shows a warning, tapping back will prompt ForeFlight to automatically reduce the planned Start Fuel to the lower limit calculated by Takeoff Analysis. If you selected a Fuel Policy other than Maximum, you must manually reduce the fuel quantity or payload to the constrained value to remove the warning.
16. RUNWAY ANALYSIS

16.3.3 Single-Engine Takeoff Analysis

Takeoff Analysis for single-engine aircraft calculates the total distance required for takeoff given the selected runway, aircraft performance, and environmental conditions.

16.3.4 Takeoff Analysis - Performance Summary

Takeoff Analysis key performance results are always visible at the top of the view in the Performance Summary. Additional performance results are available in the Takeoff Analysis Performance section.

The Performance Summary is populated once a runway is selected. Results are initially based on the aircraft’s default takeoff configuration and the current or forecast weather. Results are updated each time a new departure runway is selected or a configurable field is edited. If a takeoff is deemed impossible, the Performance Summary is blank.

Information in the summary varies based on the aircraft type. The information found in the summary is representative of the performance results that can be calculated using the aircraft’s flight manual.

Complete performance results for can also be found in the Runway Analysis Summary Document.
16. RUNWAY ANALYSIS

16.3.5 Takeoff Analysis - Departure Runway

The Departure Runway section contains fields that define the runway environment. The fields in this section are automatically populated with the latest data and represent the variables that affect the selected aircraft’s takeoff performance.

A field is only included in the Departure Runway section if it is documented in the aircraft flight manual as a variable that affects takeoff performance (e.g., Surface Condition).

The Departure Runway values can be overwritten to accommodate unique circumstances (e.g., runway NOTAMs). To overwrite a value, tap the applicable field and enter a new value.
16. RUNWAY ANALYSIS

16.3.6 Selecting a Departure Runway

To select a departure runway, tap the Runway field and select a runway from the list. Each available runway for the airport is included in the list even if the runway is closed. When a NOTAM is issued to close a runway, a Closed tag is displayed next to the runway name. Runway distance reductions via NOTAM are not reflected in the Departure Runway section.

When weather data is available via the internet, ADS-B, or XM, the wind component for each runway is displayed. Headwind components are displayed in green, tailwinds in red, and crosswind components in grey. The weather used to determine the wind component is displayed below the list of available runways.
16. RUNWAY ANALYSIS

Runway Details

When selecting a runway, the Details button opens a new view with additional runway information including:

- Surface dimensions
- Surface type and condition
- Wind components
- Glide Slope Indicators
- Slope
- Magnetic heading
- Lighting
- Elevation
- Available procedures

![Runway Detail View](image)

ForeFlight Mobile Pilot’s Guide
16. RUNWAY ANALYSIS

**Departure Runway Field Definitions**

Definitions for terms and abbreviations found in the Departure Runway section are listed below.

- **TORA** - The portion of the runway suitable for the takeoff ground roll.
- **TODA** - Takeoff Distance Available (includes stopway and clearway).
- **ASDA** - Accelerate Stop Distance Available (includes stopway).
- **Stopway** - Paved area beyond TORA that can be used for stopping during a rejected takeoff.
- **Clearway** - Unpaved area clear of obstacles beyond the runway that can be used for a portion of the initial climb with unbalance field length takeoffs.
- **Lineup Allowance** - Distance loss in takeoff calculations due to lining the aircraft on the centerline (typically only applicable to large jets and airliners). Lineup Allowance is set to zero by default.
- **Slope** - The difference in elevation from the beginning of the runway to the end, divided by the runway length, and multiple by one hundred.
- **Surface Condition** - The physical condition of the runway according to the options published in the aircraft’s flight manual. Dry/Not Contaminated is the default value.
16. RUNWAY ANALYSIS

16.3.7 Takeoff Analysis - Obstacle Analysis

Obstacle Analysis is exclusive to multi-engine aircraft. This section enables and disables the obstacle constraint, selects the engine out procedure, and is used to specify additional obstacles along the departure runway centerline. The Obstacle Analysis section is made available when a runway has been selected.

Obstacle Analysis Toggle Switch

The first row of the Obstacle Analysis section is a toggle switch for enabling or disabling the Obstacle Analysis.

When enabled, Takeoff Analysis evaluates the selected Engine Out Procedure and Additional Departure Obstacles to ensure clearance can be maintained. If obstacle clearance cannot be maintained, obstacles become the limiting constraint and the maximum takeoff weight is reduced until the flight is deemed possible. Obstacle Analysis includes banked climb performance degradation.

When Obstacle Analysis is disabled, the Engine Out Procedure field is removed and obstacles are not evaluated for that phase of flight. Departure obstacles manually added are still evaluated when Obstacle Analysis is disabled.
16. RUNWAY ANALYSIS

16.3.8 Takeoff Analysis - Engine Out Procedure

The Engine Out Procedure (EOP) specifies the route that will be flown in the event of an engine failure. The selected EOP is used for Obstacle Analysis and is included in the Runway Analysis Summary Document.

The Straight Out procedure analyzes obstacles along the runway heading and is selected by default. To select a different EOP, tap the field and select an option from the list (if available).

ForeFlight Designed Engine Out Procedures

Engine Out Procedures labeled EOP are designed by ForeFlight. There are over 9,000 ForeFlight EOPs to choose from, with more being regularly added.

When possible, ForeFlight EOPs are overlayed onto existing Standard Instrument Departure (SID) procedures. All ForeFlight EOPs are designed in accordance with FAA Advisory Circular 120-91A.
16. RUNWAY ANALYSIS

16.3.9 Takeoff Analysis - Additional Departure Obstacles

The Additional Departure Obstacle field is used to manually add obstacles along the runway extended centerline. This feature is useful for adding obstacles that are issued via NOTAM and are not yet in the obstacle database.

Adding Obstacles

To add an obstacle, follow the steps below.

1. Tap Additional Departure Obstacles.
2. Tap Add Obstacle or the [+ ] bottom in the upper right corner.
3. Manually specify a distance from the departure end of the runway (DER).
4. Manually specify a height above the DER.
5. To add additional obstacles, repeat steps 1-3.
6. When complete, tap the Back button near the top of the screen.

Deleting Obstacles

To delete an obstacle, swipe from right to left and tap Delete. When complete, tap the Back button near the top of the screen.

NOTE: It is not possible to add obstacles not aligned with the extended centerline.
16. RUNWAY ANALYSIS

16.3.10 Takeoff Analysis - Weather

Takeoff Analysis automatically loads the airport’s latest METAR, TAF, MOS forecast, or general forecast (using ForeFlight Daily Weather) according to the flight’s estimated departure time. If the departure airport does not provide weather information, Runway Analysis uses the appropriate weather from a nearby airport. The weather source and raw text are displayed at the bottom of the Weather section.

Temperature

The Aerodrome Forecast (TAF) does not include temperature data. If the Weather section indicates data is derived from a TAF, temperature data will be provided by the MOS forecast. When the MOS forecast issues a range of temperatures, the maximum temperature in the range is used.

NOTE: ForeFlight Dispatch does not use MOS forecast temperature data. Flights planned with ForeFlight Dispatch use temperature from the METAR when the flight’s estimated time of departure is within 3 hours. If the ETD is greater than 3 hours, the temperature field is blank and needs to be manually entered.
16. RUNWAY ANALYSIS

**Custom Weather**

Each field in the weather section can be edited to allow for scenario planning. When a weather field is edited, the source and raw text at the bottom of the section change to “Using Custom Weather.”

When custom weather information has been entered, the performance results are updated, and the edited values are used throughout Takeoff Analysis. For example, if Wind Speed is manually edited, the wind components are updated to reflect the custom weather when selecting a runway.

![Weather Section](image)

**Takeoff Analysis Custom Weather**

**Wind Direction**

Wind Direction is given relative to true north by default. To use magnetic winds, tap the **Use °M** button. Using magnetic winds changes the weather source to custom.

**Altimeter**

Altimeter information can be displayed in inches of mercury (inHg) or hectopascal (hPa). To convert from one unit to the other, tap the button in the altimeter field.

**Weather Reset**

To revert the weather back to the current METAR or forecast weather after making edits, tap the **Reset** button in the top right corner of the Weather section.
16. RUNWAY ANALYSIS

16.3.11 Takeoff Analysis - Aircraft Configuration

The Aircraft Configuration section is automatically populated with the planned takeoff weight and default values from the aircraft’s Field Performance settings.

Each field in the section can be edited to accommodate a non-standard takeoff configuration. Adjusting the aircraft’s takeoff configuration updates the planning results.

![Aircraft Configuration Table]

**Takeoff Analysis Aircraft Configuration**

*Aircraft Configuration Checks*

Some aircraft equipment may have limitations that prohibit a configuration from being selected. For example, this aircraft is prohibited from applying deicing fluid with takeoff flaps. When takeoff flaps are selected, the Deice Fluid Applied option is displayed in grey but is not selectable.
Aircraft Configuration Errors

If a takeoff configuration is selected that exceeds a limit, an error is displayed. In this example, the anti-ice setting was enabled outside of published limits.

Takeoff Configuration Error Message

Aircraft Configuration - V1 Type

Takeoff decision speed (V1) is a calculated value that is affected by multiple variables (takeoff weight, thrust, aircraft configuration, and runway length). Most non-transport category aircraft calculate a single V1 speed using the balanced field length technique.

Some larger aircraft provide performance results for multiple V1 speeds. When planning with one of these types of aircraft, there are options for selecting a V1 speed (V1 Min, V1 BFL, or V1 Max).

Balanced Field Length (BFL)

The balanced field length is a condition where the distance required to stop the aircraft after an abort (at V1) equals the distance required to continue the takeoff and reach 35 ft above the runway surface. With a single V1 speed, the pilot can abort or continue the takeoff at V1 in the event of an engine failure.

Unbalanced Field Length

When planning with an aircraft that supports unbalanced V1 speed calculations, Takeoff Analysis provides V1 Min, V1 BFL, and V1 Max options.

- **V1 Min** is the minimum V1 speed published for the flight conditions and results in a shorter accelerate stop distance but a higher accelerate-go distance.
- **V1 BFL** is the speed that results in equal accelerate-stop and accelerate-go distances.
- **V1 Max** is the maximum V1 speed published for the flight conditions and results in a shorter accelerate go distance, but a higher accelerate stop distance.
16. RUNWAY ANALYSIS

16.3.12 Takeoff Analysis - Emergency Return

The Emergency Return section is used to perform a Landing Analysis for the departure airport in the event of an emergency after departure. To conduct an Emergency Return analysis, tap the field and select a runway.

If an Emergency Return results in an overweight condition, a warning message is displayed at the top of the Emergency Return view. However, that warning is not also displayed on the Flights view since an emergency return is often expected to be overweight.

![Emergency Return - Landing Analysis](image)

<table>
<thead>
<tr>
<th>Landing Weight</th>
<th>Actual Dist.</th>
<th>VAPP</th>
<th>VREF</th>
</tr>
</thead>
<tbody>
<tr>
<td>7,694 lbs</td>
<td>2,377’</td>
<td>103 kias</td>
<td>96 kias</td>
</tr>
</tbody>
</table>

MLW: 9,900 lbs | Structural Weight Limited

<table>
<thead>
<tr>
<th>RETURN TO BASE RUNWAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Runway</td>
</tr>
<tr>
<td>LDA</td>
</tr>
<tr>
<td>Slope</td>
</tr>
<tr>
<td>Surface Condition</td>
</tr>
<tr>
<td>Landing Factor</td>
</tr>
</tbody>
</table>

Emergency Return - Landing Analysis
16. RUNWAY ANALYSIS

16.3.13 Takeoff Analysis - Performance

The Performance section contains all takeoff performance results for the selected runway. The items in the Performance section vary by aircraft type and represent the information found in the aircraft flight manual. The results discussed in this section are only included in the results if they are related to the selected aircraft. Performance results cannot be edited directly.

![Takeoff Analysis - Performance Section]

**Takeoff Runway 32**

<table>
<thead>
<tr>
<th>TOW</th>
<th>91,482 lbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>BFL</td>
<td>5,310'</td>
</tr>
<tr>
<td>V1 / VR / V2 / VSE</td>
<td>123 / 128 / 140 / 180</td>
</tr>
<tr>
<td>Level Off Alt</td>
<td>1,683'</td>
</tr>
</tbody>
</table>

**MTOW: 98,124 lbs | Obstacle Limited**

**PERFORMANCE**

- **Trim Setting Units**: 6.65 (at 38.1% MAC)
- **TO Thrust Rated EPR**: 1.57
- **TO Thrust LP RPM**: 93.5%
- **V1**: 123 kcas
- **VR**: 128 kcas
- **V2**: 140 kcas
- **Accel-Stop Distance**: 5,310'
- **Accel-Go Distance**: 5,310'
- **Level-Off MSL**: 1,683'
- **2nd Seg Gross Climb Gradient**: 5.4%
- **VSE**: 180 kcas
- **Enroute Net Gradient (at level-off)**: 4.6%
16. RUNWAY ANALYSIS

Performance Results
Performance results include values related to aircraft power, speed, distance, and altitude. These values correlate to individual takeoff, climb, and level-off segments as defined in the aircraft’s flight manual.

Some aircraft are certified with two level-off and accelerate segments. The first segment is typically between 400 ft and 1,500 ft AGL and the second is 1,500 ft or higher. Once the aircraft is 1,500 ft or higher and reaches the en-route speed, Takeoff Analysis is complete.

If the aircraft is certified with two level-off and accelerate segments, the performance results are included in the Takeoff Analysis.
16. RUNWAY ANALYSIS

**Takeoff Trim**

Runway Analysis supports Takeoff Trim for select aircraft (listed below). To generate Takeoff Trim results, calculate weight and balance (W&B) using the integrated W&B tool with a profile that has %MAC enabled. If Weight & Balance is not calculated with %MAC enabled, the error message “CG Unavailable” is displayed in place of the trim results.

Takeoff Trim results are displayed near the top of the Takeoff Analysis Performance section and in the Runway Analysis Summary Document.

- Challenger 300
- Challenger 604
- Challenger 605
- Challenger 650
- Falcon 900DX/900DX API Winglets
- Falcon 900EX/900EX EASy
- Falcon 900LX
- Global 5000 87.7k
- Global 5000 88.7k
- Global 5000 89.7k
- Global 5000 92.5k
- Global 6000 98k
- Global 6000 99.5k
- Global Express 93.5k
- Global Express 95k
- Global Express 96k
- Global Express 98k
- Global XRS 98k
- Global XRS 99.5k
- Global 7500
- Learjet 35A
- Learjet 40XR
- Learjet 45XR
- Learjet 60
- Learjet 60XR
- Learjet 70
- Learjet 75
- Phenom 300/300E
- Gulfstream IV
- Gulfstream IV/SP
- Gulfstream V
- Gulfstream VII-500
- Gulfstream VII-600
- Gulfstream 150
- Gulfstream 200
- Gulfstream 280
- Gulfstream 300
- Gulfstream 350
- Gulfstream 400
- Gulfstream 450
- Gulfstream 550
- Gulfstream 650
- Gulfstream 650ER
- Pilatus PC-24
- Cessna 680 Citation Sovereign
- Cessna 680 Citation Sovereign+
- Cessna 680A Citation Latitude
16. RUNWAY ANALYSIS

**Speed-Related Definitions**

The following results related to aircraft indicated airspeed may be found in the Performance section.

- $V_1$ is the speed by which the pilot must initiate an action to abort the takeoff in the event of an engine failure.
- $V_R$ is the speed at which the pilot initiates rotation by pulling back on the yoke or stick to transition to flight.
- $V_2$ is the speed that must be attained when the aircraft is 35 ft above the runway surface with one engine inoperative. $V_2$ is also the target climb speed after engine failure to maintain through initial level-off.
- **50' Speed** is the climb speed reached at the end of the total takeoff distance while 50 ft AGL (gear down and takeoff flaps).
- $V_{SE}$ is the clean configuration climb speed after all obstacles have been cleared.
- $V_{FTO}$ is the takeoff final climb segment speed.
- $V_{ENR}$ is the en route climb speed, or the target speed after all obstacle segments have been completed and the aircraft is clear of all obstacles. Once the aircraft reaches this speed, the Takeoff Analysis portion of the flight is complete.

**Distance-Related Results**

The following aircraft distance-related results may be found in the Performance section.

- **Ground Roll** - Takeoff roll (ground roll) is the portion of the takeoff procedure during which the airplane is accelerated from a standstill to an airspeed that provides sufficient lift to become airborne.
- **BFL** is the balanced field length. This distance is determined by finding the $V_1$ speed that results in an equal distance for accelerate-go and accelerate-stop.
- **Total Dist** is the distance required to complete a takeoff to 35 ft above the runway surface.
- **TOFL** is the takeoff field length, or the length required to complete a takeoff to 35 ft above the runway surface.
16. RUNWAY ANALYSIS

16.3.14 Takeoff Analysis - Engine Out Procedure

The Engine Out Procedure section at the bottom of Takeoff Analysis displays the textual portion of the selected engine out procedure (EOP) when planning with a multi-engine aircraft. The EOP is selected in the Obstacle Analysis section.

ENGINE OUT PROCEDURE

RNAV procedure, GPS required. Unless otherwise specified, all fixes are fly-by fixes and all turns are climbing 15 degrees of bank.

Maintain runway heading direct LURBY.

Climb in holding pattern at LURBY, RIGHT turns, 25 degree bank, 5 NM legs, 045° course inbound. Do not exceed 230 KIAS.
16. RUNWAY ANALYSIS

16.4 Conducting Landing Analysis

Landing Analysis determines the maximum landing weight, landing distance, and landing reference speed for the selected runway and aircraft configuration.

To conduct a Landing Analysis, enter the flight's route, payload, and fuel details into the Flights view then tap the **Landing** button next to the destination or alternate airport and select a runway.

To conduct a Landing Analysis for the departure airport, select the **Emergency Return** option from the Takeoff Analysis view. Landing Analysis results are calculated once a runway is selected.

The **Takeoff** or **Landing** buttons may be hidden under the following conditions:

- The selected aircraft does not support Runway Analysis.
- A Runway Analysis license for the aircraft has not been purchased.
- A non-performance tier account is being used to plan the flight.
- Runway data for the airport is unavailable.

![Landing Analysis Buttons](image)
16. RUNWAY ANALYSIS

16.4.1 Landing Analysis View

The Landing Analysis view is organized into sections. At the top of the Landing Analysis view, a Performance Summary displays key performance metrics for quickly evaluating a landing.

Each Landing Analysis section is described in detail throughout this chapter.

**Landing Analysis Sections**

- Performance Summary
- Destination Runway
- Weather
- Aircraft Configuration
- Performance

**Takeoff Analysis Default Data**

When planning a new flight, Landing Analysis is automatically populated with the latest runway data, current (or forecast) weather, and default aircraft configuration.

Each field in blue text can be edited from this view to plan hypothetical conditions or circumstances that are unique to the flight.

For example, if the runway’s usable length has changed due to construction, you can manually edit the runway’s length to represent current conditions.
16. RUNWAY ANALYSIS

16.4.2 Landing Analysis - Performance Summary

Landing Analysis performance results are always visible at the top of the view in the Performance Summary. Additional performance data is available in the Performance section.

Performance results are displayed once a destination runway is selected. Results are initially based on the aircraft’s default landing configuration and the current or forecast weather. Results are updated each time a new destination runway is selected, or a configurable field is edited.

If a landing is deemed impossible due to a limit being exceeded, the performance summary will be blank.

Information in the summary varies based on the aircraft type. The information found in the summary is representative of the performance results that can be derived from the aircraft’s flight manual.

---

**Landing Analysis Performance Summary - Single Engine Aircraft**

<table>
<thead>
<tr>
<th>Weight</th>
<th>Total Dist</th>
<th>VAPP</th>
</tr>
</thead>
<tbody>
<tr>
<td>7,070 lbs</td>
<td>2,970’</td>
<td>72 kias</td>
</tr>
</tbody>
</table>

**Landing Analysis Performance Summary - Multi Engine Aircraft**

<table>
<thead>
<tr>
<th>Landing Weight</th>
<th>Actual Dist.</th>
<th>VAPP</th>
<th>VREF</th>
</tr>
</thead>
<tbody>
<tr>
<td>7,663 lbs</td>
<td>2,491’</td>
<td>103kias</td>
<td>96kias</td>
</tr>
</tbody>
</table>

MLW: 9,900 lbs | Structural Weight Limited
16. RUNWAY ANALYSIS

16.4.3 Determining Maximum Landing Weight

Landing Analysis calculates a unique maximum landing weight (MLW) for the flight by reducing the MLW until all constraints are satisfied or the landing is deemed impossible.

For example, when planning operations to a short runway, the maximum landing weight is reduced so that the distance required to land and stop is less than the runway’s landing distance available (LDA).

**Identifying the Limiting Constraint**

Landing Analysis displays the MLW and limiting constraint for the flight at the bottom of the performance summary. There are seven potential constraints that can limit the MLW.

<table>
<thead>
<tr>
<th>Planned Landing Weight</th>
<th>Maximum Landing Weight</th>
<th>Limiting Constraint</th>
</tr>
</thead>
<tbody>
<tr>
<td>7,663 lbs</td>
<td>7,955 lbs</td>
<td>Runway Limited</td>
</tr>
</tbody>
</table>

Actual Dist. 2,147’ VAPP 103ktas VREF 96ktas
16. RUNWAY ANALYSIS

**Landing Impossible Error**

If Landing Analysis determines the required landing distance exceeds the landing distance available, an error message is displayed at the top of the view.

To clear the error, try the following suggestions:

- Select a different runway.
- Reduce Start Fuel or Payload.
- Manually edit winds to determine if landing under different environmental conditions results in a successful landing.
- Select a different Surface Condition (e.g., Dry).
- Adjust the Landing Factor.
- Adjust the Aircraft Configuration (e.g., enable drag-producing equipment).

![Landing Impossible Error Image]
16. RUNWAY ANALYSIS

Limiting Constraints

Variables that have the potential to limit the maximum landing weight or render the landing impossible are listed below. When a constraint limits the maximum landing weight (MLW), the bold text in this section is displayed at the bottom of the performance summary, followed by the word “Limited” (e.g., Runway Limited).

- **Structural Weight** is the maximum structural landing weight for the aircraft type as defined by the aircraft flight manual. If an aircraft is not limited by performance or environmental constraints, MLW is determined by the aircraft’s structural weight limit.

- **Runway** length and weight capacity can reduce the MLW or deem a landing impossible.

- **Temperature** can not exceed the aircraft flight manual’s published temperature limits.

- **Wind** components cannot exceed the aircraft flight manual’s published wind limits.

- **Brake Energy** required to stop the aircraft cannot exceed the published limits. This constraint is most common on downslope runways or landings with a tailwind.

- **Tire Speed** cannot exceed the aircraft flight manual’s published tire speed limits.

- **AFM Data** limits exist when data interpolation is not possible. When an AFM Data limit is applicable, Runway Analysis uses the next available lower value. For example, suppose the planned landing weight is 18,500 lbs, yet performance data only exists for 20,000 lbs and 15,000 lbs. In this case, Landing Analysis will limit MLW to 15,000 lbs and the performance summary will indicate AFM Data Limited.
16. RUNWAY ANALYSIS

16.4.4 Landing Analysis - Destination Runway

The Destination Runway section contains various fields for defining the runway environment. The variables (e.g., landing distance available) are automatically populated with the latest available data and can be overwritten to accommodate unique circumstances (e.g., runway NOTAMs). To overwrite a value, tap the field and enter a new value.

The fields available in the Destination Runway section vary by aircraft type. A field is only included in the Destination Runway section if it is documented as a variable that affects landing performance in the aircraft’s flight manual (e.g., Surface Condition).

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Runway</td>
<td>22</td>
</tr>
<tr>
<td>LDA</td>
<td>7,504 ft</td>
</tr>
<tr>
<td>Slope</td>
<td>0.01%</td>
</tr>
<tr>
<td>Surface Condition</td>
<td>0.5in Water</td>
</tr>
<tr>
<td>Landing Factor</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Destination Runway Section
16. RUNWAY ANALYSIS

16.4.5 Selecting a Destination Runway

To select a destination runway, tap the Runway field and choose a runway from the list. Each available runway for the airport is included in the list even if the runway is closed. When a NOTAM is issued to close a runway, a Closed tag is displayed next to the runway name.

When weather data is available, the wind components for each runway are displayed. Headwind components are displayed in green, tailwinds in red, and crosswind components in grey. The weather used to determine the wind component is displayed below the list of available runways.
16. RUNWAY ANALYSIS

Runway Details

When selecting a runway, the Details button opens a new view with additional runway information, including:

- Surface dimensions
- Surface type and condition
- Wind components
- Glide Slope Indicators
- Slope
- Magnetic heading
- Lighting
- Elevation
- Available procedures

---

Runway 11
5,158' x 150', 319' MSL
Asphalt, excellent condition

**Surface**
- Dimensions: 5,158' x 150'
- Type: Asphalt, excellent condition

**Wind Components**
- Rwy 11: 3kts, 2kts
- Wind: 050° at 4 kts (22m ago)

**Glide Slope Indicator**
- Rwy 11: 4-box VASI (on left)

**Slope**
- Rwy 11: -0.16%

**Heading**
- Rwy 11: 106°M

**Lighting**
- Appr. Rwy 11: None
- Edge: Medium Intensity

**Elevation**
- Rwy 11 Touchdown: 319' MSL

**Procedures**
- RNAV (GPS) Rwy 11
- VOR or TACAN Rwy 11

---

Runway Detail View
16. RUNWAY ANALYSIS

*Destination Runway Field Definitions*

Definitions for most terms and abbreviations used in the Landing Runway section can be found below. Items will vary by aircraft type and represent the data found in the aircraft’s flight manual.

- **LDA** - Runway Landing Distance Available. It does not include unusable runway distance as specified by NOTAM.

- **Stopway** - The paved area beyond the portion of the runway suitable for the takeoff ground roll that can be used for stopping during a rejected takeoff.

- **Clearway** - The unpaved area clear of obstacles beyond the takeoff runway that can be used for a portion of the air distance with unbalance field length takeoffs.

- **Slope** - The difference in elevation from the beginning of the runway to the end, divided by the runway length and multiple by one hundred.

- **Surface Condition** - The physical condition of the runway according to the options published in the aircraft’s flight manual. Dry/Not Contaminated is the default value.

- **Landing Factor** - The value by which the calculated landing distance is multiplied to produce the Factored Distance.

- **Factored Distance** - A longer landing distance achieved by multiplying the actual distance (also called unfactored distance) with a multiplier larger than 1.0, called the factor. This is done to provide a safety buffer distance to avoid landing overruns. The landing factor is never less than 1.0.

![Destination Runway Table](image)

**Destination Runway Section**
16. RUNWAY ANALYSIS

16.4.6 Landing Analysis - Weather

Landing Analysis automatically loads the airport’s latest METAR, TAF, MOS forecast, or general forecast (using ForeFlight Daily Weather) according to the flight’s estimated departure time. If the destination airport does not provide weather information, a nearby airport’s weather is used. The weather source and the raw METAR or forecast are displayed at the bottom of the weather section.

![Weather Section](image)

**Landing Analysis Weather Section (KHOU TAF)**

**Temperature**

The Aerodrome Forecast (TAF) does not include temperature data. If the Weather section indicates data is derived from a TAF, temperature data will be provided by the MOS forecast. When the MOS forecast issues a range of temperatures, the maximum temperature in the range is used.

**NOTE:** ForeFlight Dispatch does not use MOS forecast temperature data. Flights planned with ForeFlight Dispatch use temperature from the METAR when the flight’s estimated time of departure is within 3 hours. If the ETD is greater than 3 hours when planning with Dispatch, the temperature field needs to be manually entered.
16. RUNWAY ANALYSIS

Custom Weather

Each field in the weather section can be edited to allow for scenario planning. When a weather field is edited, the source and raw text at the bottom of the section change to “Using Custom Weather.”

When custom weather information has been entered, the performance results are updated, and the edited values are used throughout Landing Analysis. For example, if Wind Speed is manually edited, the wind components are updated to reflect the custom weather when selecting a runway.

Wind Direction

Wind Direction is given relative to true north by default. To use magnetic winds, tap the Use °M button. Using magnetic winds changes the weather source to custom.

Altimeter

Altimeter information can be displayed in inches of mercury (inHg) or hectopascal (hPa). To convert from one unit to the other, tap the button in the altimeter field.

Weather Reset

To revert the weather back to the current METAR or forecast weather after making edits, tap the Reset button in the top right corner of the Weather section.
16. RUNWAY ANALYSIS

16.4.7  Landing Analysis - Aircraft Configuration

The Aircraft Configuration section is automatically populated with the planned landing weight and the default values from the aircraft’s Field Performance settings.

Each field in the section can be edited to accommodate a non-standard landing configuration. Adjusting the aircraft’s landing configuration updates the planning results.

Aircraft Configuration Checks

Some aircraft equipment may have limitations that prohibit a configuration from being selected. If a configuration is not possible, the item will be displayed but is not selectable.

Aircraft Configuration Errors

If a landing configuration is selected that exceeds a limit, an error message is displayed at the top of Landing Analysis, and the performance results are blank.
16.4.8 Landing Analysis - Performance

The Landing Analysis Performance section displays landing results for the selected runway (and balked landing results for single-engine aircraft). The items in the Performance section vary by aircraft type and represent the information found in the aircraft's flight manual. Most aircraft provide landing results related to speed and distance.

![Landing Analysis Performance Section](image)

### Speed-Related Definitions

The following results may be found in the Landing Analysis Performance section.

- \( V_{\text{APP}} \) (Approach Speed) - A target indicated airspeed flown during the approach phase of the landing, typically at approach flap setting and gear up.
- \( V_{\text{REF}} \) (Reference Speed) - A target indicated airspeed slower than \( V_{\text{APP}} \) flown at landing flap settings and gear down to be achieved by 50 ft height when crossing the landing threshold.

### Distance-Related Definitions

- **Ground Roll** - The distance required to decelerate the aircraft to normal taxi speed after touchdown.
- **Actual Landing Distance** - The demonstrated (during flight testing) total landing distance achievable by the aircraft.
- **Factored Distance** - A longer landing distance achieved by multiplying the actual distance (also called unfactored distance) with a multiplier larger than 1.0. This is done to provide a safety buffer and thus avoiding landing overruns.
16. RUNWAY ANALYSIS

16.5 Runway Analysis Summary Document

Runway Analysis includes a Summary Document. There are two document formats. One for single-engine aircraft and another for multi-engine.

To generate the Summary Document, use Runway Analysis to select runways for the departure, destination, and alternate airport. Tap Summary in the upper-right corner of the Takeoff Analysis or Landing Analysis view. If an emergency return runway or alternate airport runway is not selected, the summary document omits this information.

16.5.1 Single-Engine Summary Document

The Single-Engine Summary Document is organized into three sections. Takeoff and landing performance results are displayed at the top of the document. Below the takeoff and landing data is a climb performance table (when climb data is available). If an emergency return or alternate airport runway is selected, the performance results for those runways is displayed below the climb table. The climb table includes performance data for the current temperature and -5ºC, +5ºC, and +15ºC deltas.
16. RUNWAY ANALYSIS

16.5.2 Multi-Engine Summary Document

The Multi-Engine Summary Document is organized into four sections.

- Takeoff and Landing Summary for the selected runways.
- Maximum Takeoff Weight Analysis for all runways at the departure airport.
- Maximum Landing Weight Analysis for all runways at the destination airport.
- Landing Summary for the alternate airport and emergency return (if selected).

**Takeoff and Landing Summary Section**

The Multi-Engine Takeoff and Landing Summary section contains performance, environmental, aircraft configuration, and engine-out procedure data for the selected runways. If a takeoff or landing is deemed impossible, the summary section is blank, and an error message is displayed instead.

<table>
<thead>
<tr>
<th>TAKEOFF SUMMARY</th>
<th>LANDING SUMMARY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Takeoff Weight</td>
<td>Landing Weight</td>
</tr>
<tr>
<td>9.383 lbs</td>
<td>7.463 lbs</td>
</tr>
<tr>
<td>Wind</td>
<td>Wind</td>
</tr>
<tr>
<td>300°T / 4 kts</td>
<td>--</td>
</tr>
<tr>
<td>4 kts</td>
<td>32°C</td>
</tr>
<tr>
<td>Temperature</td>
<td>Temperature</td>
</tr>
<tr>
<td>27°C</td>
<td>26.92 inHg / 1017 hPa</td>
</tr>
<tr>
<td>Altimeter</td>
<td>Altimeter</td>
</tr>
<tr>
<td>30.03 inHg / 1017 hPa</td>
<td>30.02 inHg / 1017 hPa</td>
</tr>
<tr>
<td>Takeoff Flaps</td>
<td>Landing Flaps</td>
</tr>
<tr>
<td>15°</td>
<td>35°</td>
</tr>
<tr>
<td>Anti-Ice</td>
<td>VREF Increment</td>
</tr>
<tr>
<td>Off</td>
<td>+5 KIAS</td>
</tr>
<tr>
<td>Anti-skid</td>
<td>Anti-Ice</td>
</tr>
<tr>
<td>Operable</td>
<td>Off</td>
</tr>
<tr>
<td>Type II/III/IV Deice Fluid</td>
<td>Operable</td>
</tr>
<tr>
<td>Not Applied</td>
<td>Runway</td>
</tr>
<tr>
<td>Rolling Takeoff</td>
<td>07R</td>
</tr>
<tr>
<td>No</td>
<td>LDA</td>
</tr>
<tr>
<td>FAA 120-91A</td>
<td>7,800 ft</td>
</tr>
<tr>
<td>Runway / EOP</td>
<td>Surface Condition</td>
</tr>
<tr>
<td>13L / Straight Out</td>
<td>Dry</td>
</tr>
<tr>
<td>TORR / TODA / ASDA</td>
<td>VAPP / VREF</td>
</tr>
<tr>
<td>Surface Condition</td>
<td>102 / 95 KIAS</td>
</tr>
<tr>
<td>Dry</td>
<td>Actual Distance</td>
</tr>
<tr>
<td>Takeoff Thrust N1</td>
<td>2,303 ft</td>
</tr>
<tr>
<td>98.5%</td>
<td>Approach Climb Gradient</td>
</tr>
<tr>
<td>V1 / VR / V2 / VENR</td>
<td>10.9%</td>
</tr>
<tr>
<td>94 / 98 / 105 / 118 KIAS</td>
<td>3,041 ft</td>
</tr>
<tr>
<td>TOFL</td>
<td>Level Off Altitude</td>
</tr>
<tr>
<td>3,041 ft</td>
<td>1,665 ft</td>
</tr>
</tbody>
</table>

**TAKEOFF ENGINE OUT PROCEDURE**

Continue straight on extended runway centerline.

**Takeoff and Landing Summary Section**
16. RUNWAY ANALYSIS

Max Takeoff Weight Analysis

The Maximum Takeoff Weight (MTOW) Analysis section contains the MTOW for each runway at the departure airport. Performance results for temperatures above and below the planned temperature are displayed on unique rows. Results for all available engine-out procedures and displayed in columns.

The constraint that limits MTOW is displayed below the results for the scenario. If a takeoff is deemed impossible for a runway, the text Takeoff Impossible replaces the performance results.

Max Takeoff Weight Analysis - KDWI - David Wayne Hooks Memorial - Elevation 152 ft
16. RUNWAY ANALYSIS

**Max Landing Weight Analysis**

The Maximum Landing Weight (MLW) Analysis calculates the landing distance and MLW for all runways at the destination airport. Results are given for three scenarios: zero winds, ten-knot tailwind, and the planned winds. If a landing is deemed impossible, the results are replaced with the text *Landing Impossible*.

### Maximum Landing Weight Analysis Section

#### Emergency Return and Alternate Landing Analysis

When an Emergency Return runway or Alternate Airport runway is selected, a summary of the performance, environmental, and aircraft configuration data is displayed below the Max Landing Weight Analysis section.

---

**Emergency Return and Alternate Landing Section**

---
16. RUNWAY ANALYSIS

16.5.3 Summary Document Options

The Multi-Engine and Single-Engine Summary Documents can be annotated, shared, printed, or attached to a Flight by tapping the share button in the upper-right corner.
TAKEOFF & LANDING PERFORMANCE

Takeoff & Landing Performance provides integrated takeoff and landing distance calculations for over 300 popular piston aircraft and is included with all Performance-tier subscriptions. Jet and turboprops can calculate takeoff and landing performance with a Runway Analysis license.

Compared to calculating takeoff and landing distances by hand, Takeoff & Landing Performance is a faster, integrated alternative. Takeoff & Landing Performance calculations can also be completed using ForeFlight Web. This chapter discusses how to configure your aircraft’s default Takeoff & Landing Performance settings, and how to calculate results.
17. TAKEOFF & LANDING PERFORMANCE

17.1 Configuring Takeoff & Landing Performance

The first step to configuring an aircraft for Takeoff & Landing Performance is determining if the aircraft type is supported. Aircraft that support Takeoff & Landing Performance display a label below the aircraft type and include additional performance settings.

17.1.1 Verifying Takeoff & Landing Performance Support

To check if your aircraft supports Takeoff & Landing Performance, select More > Aircraft and choose an aircraft profile. Tap the Aircraft Type field and ensure the Supports Takeoff & Landing Performance label is displayed.

If the label is missing, either the aircraft type is not yet supported or a Performance tier account is not being used.
17. TAKEOFF & LANDING PERFORMANCE

17.1.2 Takeoff & Landing Performance Settings

Another method for determining Takeoff & Landing support is checking the aircraft profile’s Performance section. Aircraft that support Takeoff & Landing Performance have settings for selecting a Runway Profile and configuring the aircraft’s default takeoff and landing configuration. If these settings are missing, the aircraft does not support Takeoff & Landing Performance.

To access the settings, select More > Aircraft, and choose an aircraft profile. Tap Runway Profile or Field Performance in the aircraft’s Performance section to edit the settings.

**Runway Profile**

The Runway Profile setting specifies the serial number, weight limit, or special equipment for which the Takeoff & Landing Performance data is applicable. If more than one profile exists for the aircraft type, tap the Runway Profile setting and choose the correct version for your aircraft.
17. TAKEOFF & LANDING PERFORMANCE

Field Performance

The Field Performance setting specifies the default takeoff and landing configuration for the aircraft (e.g., flap settings). These settings are unique to the aircraft type and reflect the variables in the performance section of the aircraft flight manual that affect Takeoff & Landing Performance. Some aircraft do not offer Field Performance settings, while others provide multiple configuration settings. If an aircraft does not provide Field Performance settings, the field is omitted from the menu.

Changes to the Field Performance settings are reflected in subsequently planned flights. Takeoff and landing configurations can also be adjusted per flight using the Flights view. Edits to the takeoff or landing configuration using the Flights view do not affect the aircraft’s default settings.

Field Performance settings are broken into two sections (takeoff and landing). Settings can be edited by tapping the appropriate field and selecting another option from the drop-down menu.

The settings and drop-down menus only contain options that are specified in the aircraft’s flight manual (e.g., Takeoff Flaps may only have options for 10° and 20°). It is impossible to set a value if it is not included in the flight manual.
17. TAKEOFF & LANDING PERFORMANCE

17.2 Calculating Takeoff Performance

Takeoff distances are calculated from the Departure / Destination section of the Flights view. To calculate Takeoff Performance results, begin by entering the flight’s route, payload, and fuel details into the Flights view.

After entering flight details, tap the Takeoff button to open the Takeoff Performance view.

If the Takeoff button is missing, it is impossible to calculate Takeoff Performance. The Takeoff or Landing buttons can be hidden under the following conditions:

- The selected aircraft does not support Takeoff & Landing Performance.
- A non-performance tier account is being used to plan the flight.
- Runway data for the airport is unavailable.

---

**Takeoff & Landing Performance Buttons**
17. TAKEOFF & LANDING PERFORMANCE

17.2.1 Takeoff Performance View

The Takeoff Performance view is organized into six sections. Each section is automatically populated with the latest runway, weather, and default aircraft configuration data.

Blue text in this view can be edited for hypothetical planning purposes or to accommodate circumstances that are unique to the flight. For example, if the runway’s usable length is reduced due to construction, you can manually edit the length to represent the available runway. Each section of the Takeoff Performance view is described in detail throughout this chapter.

![Image of Takeoff Performance View Sections]

- **Departure Runway**
- **Weather**
- **Aircraft Configuration**
- **Emergency Return**
- **Performance Results**
17. TAKEOFF & LANDING PERFORMANCE

17.2.2 Takeoff Performance Summary

The Performance Summary contains key values that allow you to quickly evaluate the takeoff.

Results are displayed at the top of the view when a runway is selected and are initially based on the aircraft’s default takeoff configuration and the current weather. The summary generally contains the planned takeoff weight, the total distance required to achieve a height of 35’ above the runway surface, and target airspeeds for the takeoff.

The Performance Summary is updated each time a new departure runway is selected or a configurable field is edited.

Compete results are available in the Performance section at the bottom of the Takeoff Performance view.
### 17. TAKEOFF & LANDING PERFORMANCE

#### 17.2.3 Takeoff Performance - Departure Runway

The Departure Runway section contains fields that define the runway environment. The fields in this section are automatically populated with the latest data and represent items that affect the selected aircraft’s takeoff performance.

Some aircraft do not provide performance data for common variables such as the runway’s surface condition (rain, snow, etc). As a result, if your aircraft flight manual does not include this data, the Departure Runway section will not include it either.

A field is only included in the Departure Runway section if it is documented in the aircraft’s flight manual as a variable that affects takeoff performance. Departure Runway values can be overwritten to accommodate unique circumstances. To overwrite a value, tap the applicable field, enter a new value, and tap **Close**.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TORA</strong></td>
<td>The portion of the runway suitable for the takeoff ground roll.</td>
</tr>
<tr>
<td><strong>TODA</strong></td>
<td>Takeoff Distance Available (includes stopway and clearway).</td>
</tr>
<tr>
<td><strong>ASDA</strong></td>
<td>Accelerate Stop Distance Available (includes stopway).</td>
</tr>
<tr>
<td><strong>Stopway</strong></td>
<td>Paved area beyond TORA that can be used for stopping during a rejected takeoff.</td>
</tr>
<tr>
<td><strong>Clearway</strong></td>
<td>Unpaved area clear of obstacles beyond the runway that can be used for a portion of the initial climb.</td>
</tr>
<tr>
<td><strong>LDA</strong></td>
<td>Runway Landing Distance Available.</td>
</tr>
</tbody>
</table>

**Declared Distances**

Declared runway distances are displayed at the bottom of the Departure Runway section.
17. TAKEOFF & LANDING PERFORMANCE

17.2.4 Selecting a Departure Runway

To select a departure runway, tap the Runway field and select a runway from the list. Each available runway for the airport is included in the list even if the runway is closed. When a NOTAM is issued to close a runway, a Closed tag is displayed next to the runway name. If a runway’s usable length is reduced due to a NOTAM, the reduced useable length is not automatically reflected in the Departure Runway section.

When weather data is available via the internet, ADS-B, or XM, the wind components for each runway are displayed. Headwind components are displayed in green, tailwinds in red, and crosswind components in grey. The weather used to determine the wind component is displayed below the list of available runways.
17. TAKEOFF & LANDING PERFORMANCE

Runway Details

When selecting a runway, the Details button opens a new view with additional runway information including:

- Surface dimensions
- Surface type and condition
- Wind components
- Glide Slope Indicators
- Slope
- Magnetic heading
- Lighting
- Elevation
- Available procedures

### Runway 11

5,158' x 150', 319' MSL
Asphalt, excellent condition

**SURFACE**

Dimensions: 5,158' x 150'
Type: Asphalt, excellent condition

**WIND COMPONENTS**

Rwy 11: 3kts, 2kts

Wind: 050° at 4 kts (22m ago)

**GLIDESLOPE INDICATOR**

Rwy 11: 4-box VASI (on left)

**SLOPE**

Rwy 11: -0.16%

**HEADING**

Rwy 11: 106°M

**LIGHTING**

Appr. Rwy 11: None
Edge: Medium Intensity

**ELEVATION**

Rwy 11 Touchdown: 319' MSL

**PROCEDURES**

- RNAV (GPS) Rwy 11
- VOR or TACAN Rwy 11
17. TAKEOFF & LANDING PERFORMANCE

17.2.5 Takeoff Performance - Weather

The Weather section displays the departure airport’s latest METAR, TAF, MOS, or general forecast based on weather data availability and the flight’s estimated departure time.

If the airport does not provide weather information, a nearby airport’s weather is used. Each field in the weather section can be manually edited. The weather source and raw text are displayed at the bottom of the weather section.

Temperature

The Terminal Aerodrome Forecast (TAF) does not provide temperature data. If Takeoff & Landing Performance indicates that weather data is provided by a TAF, temperature from the MOS forecast will be used. When the MOS forecast issues a range of temperatures, the maximum temperature in the range is used.
17. TAKEOFF & LANDING PERFORMANCE

Custom Weather

Each field in the weather section can be edited to allow for scenario planning. When a weather field is edited, the source and raw text at the bottom of the section change to “Using Custom Weather”.

When custom weather information has been entered, the performance results are updated and the edited values are used throughout Takeoff Performance. For example, if Wind Speed is manually edited, the wind components are updated to reflect the custom weather when selecting a runway.

Wind Direction

Wind Direction is given relative to true north by default. To use magnetic winds, tap the Use °M button. Using magnetic winds changes the weather source to custom.

Altimeter

Altimeter information can be displayed in inches of mercury (inHg) or hectopascal (hPa). To convert from one unit to the other, tap the button in the altimeter field. Changing altimeter units does not result in custom weather.

Weather Reset

To revert the weather back to the current METAR or forecast weather after making edits, tap the Reset button in the top right corner of the Weather section.
17. TAKEOFF & LANDING PERFORMANCE

17.2.6 Takeoff Performance - Aircraft Configuration

The Aircraft Configuration section is populated with the planned takeoff weight and default values from the aircraft’s Field Performance settings.

Each field in the section can be edited to accommodate a non-standard takeoff configuration. Adjusting the aircraft’s takeoff configuration from this view updates the planning results and not the aircraft’s default configuration.

Safety Distance Factor

The Safety Distance Factor is a user-specified safety margin. The Safety Distance Factor has a minimum and default value of 1.0 and can only be edited on a per-flight basis.

When a value other than 1.0 is entered in the Safety Distance Factor field, all distance results are multiplied by the user-specified amount. For example, to add a 25% safety margin to all results, enter a Safety Distance Factor of 1.25. To revert back to the original calculations, change the Safety Distance Factor to 1.0.
17. TAKEOFF & LANDING PERFORMANCE

17.2.7 Takeoff Performance - Emergency Return

The Emergency Return section is used to determine Landing Performance for the departure airport in the event of an emergency after departure. To conduct an Emergency Return analysis, tap the field and select a runway.

If an Emergency Return results in an overweight condition, a warning message is displayed at the top of the Emergency Return view. However, that warning is not also displayed on the Flights view since an emergency return is often expected to be overweight.
17. TAKEOFF & LANDING PERFORMANCE

17.2.8 Takeoff Performance - Performance Details

The Performance section includes results for the selected runway given the planned weather and aircraft configuration. Performance results are interpolated from flight manual performance data and are not physics-based.

The items in the Performance section vary by aircraft type and represent the information found in the aircraft flight manual (including the name of the performance parameter).

<table>
<thead>
<tr>
<th>PERFORMANCE</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rotate Speed</td>
<td>65 kias</td>
</tr>
<tr>
<td>Ground Roll</td>
<td>804'</td>
</tr>
<tr>
<td>50ft Speed</td>
<td>75 kias</td>
</tr>
<tr>
<td>Total Distance</td>
<td>1,350'</td>
</tr>
<tr>
<td>Climb Speed</td>
<td>100 kias</td>
</tr>
<tr>
<td>Climb Rate</td>
<td>1,400 fpm</td>
</tr>
<tr>
<td>Climb Gradient</td>
<td>12.4%</td>
</tr>
</tbody>
</table>

Takeoff Performance Section
### Performance Parameter Definitions

This table lists generic takeoff output labels for most aircraft, though not all aircraft provide every output label and some aircraft have specific output labels that apply only to that aircraft and are not listed here. Consult your aircraft’s flight manual for further detail on the specific aircraft configuration used for these outputs.

<table>
<thead>
<tr>
<th>Takeoff Output Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rotate Speed</td>
<td>Target takeoff speed upon which to initiate takeoff rotation.</td>
</tr>
<tr>
<td>Liftoff Speed</td>
<td>Approximate speed when main gear leaves the runway; faster than rotate speed, but slower than 50 ft speed.</td>
</tr>
<tr>
<td>Ground Roll</td>
<td>Takeoff distance from brake release point until main gear lifts off the runway.</td>
</tr>
<tr>
<td>50 ft Speed</td>
<td>Initial climb speed reached at end of total takeoff distance and at the obstacle height of 50 ft AGL with gear down and takeoff flaps.</td>
</tr>
<tr>
<td>Total Distance</td>
<td>Takeoff distance from brake release point through reaching 50 ft obstacle height point above ground level (AGL). Consists of ground roll distance and air segment for initial climb, all at takeoff flap setting and gear down (if retractable).</td>
</tr>
<tr>
<td>Accel-Stop Distance</td>
<td>Distance from brake release point through acceleration to a reject speed and subsequent deceleration to a full stop; aircraft never leaves the runway (this distance is typically only found with twin engine aircraft).</td>
</tr>
<tr>
<td>Climb Speed</td>
<td>Target speed for the initial climb after reaching the 50 ft AGL takeoff point, typically gear up, if retract (see POH for flap setting used).</td>
</tr>
<tr>
<td>Climb Rate</td>
<td>Instantaneous rate of climb in ft/min for the initial climb after reaching the 50 ft AGL takeoff point typically gear up, if retract (see POH for flap setting used).</td>
</tr>
<tr>
<td>Climb Gradient</td>
<td>Instantaneous climb gradient (rise/run) for the initial climb after reaching the 50 ft AGL takeoff point typically gear up, if retract (see POH for flap setting used).</td>
</tr>
<tr>
<td>Takeoff Climb Speed</td>
<td>Target speed for the initial climb after reaching the 50 ft AGL takeoff point in the POH-defined takeoff flap and gear configuration.</td>
</tr>
</tbody>
</table>
# 17. TAKEOFF & LANDING PERFORMANCE

<table>
<thead>
<tr>
<th>Takeoff Output Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Takeoff Climb Rate</td>
<td>Instantaneous rate of climb in ft/min for the initial climb after reaching the 50 ft AGL takeoff point in the POH-defined takeoff flap and gear configuration.</td>
</tr>
<tr>
<td>Takeoff Climb Gradient</td>
<td>Instantaneous climb gradient (rise/run) for the initial climb after reaching the 50 ft AGL takeoff point in the POH-defined takeoff flap and gear configuration.</td>
</tr>
<tr>
<td>Cruise Climb Speed</td>
<td>Target enroute climb speed, typically flaps up and gear up, if retract.</td>
</tr>
<tr>
<td>Cruise Climb Rate</td>
<td>Enroute climb rate, typically flaps up and gear up, if retract.</td>
</tr>
<tr>
<td>Cruise Climb Gradient</td>
<td>Enroute climb gradient, typically flaps up and gear up, if retract.</td>
</tr>
<tr>
<td>OEI Climb Speed</td>
<td>Target climb speed when one engine inoperative (OEI) on a twin engine aircraft.</td>
</tr>
<tr>
<td>OEI Climb Rate</td>
<td>Climb rate when one engine inoperative (OEI) on a twin engine aircraft.</td>
</tr>
</tbody>
</table>
17. TAKEOFF & LANDING PERFORMANCE

17.3 Calculating Landing Performance

Landing Performance results can be calculated for the departure, destination, and alternate airport. To calculate results, begin by entering the flight’s route, payload, and fuel details into the Flights view.

To calculate Landing Performance, tap the Landing button next to the destination or alternate airport and select a runway. To calculate Landing Performance for the departure airport, select the Emergency Return option from the Takeoff Performance view.

If the Landing button is missing, it is not possible to calculate Landing Performance. The Takeoff or Landing buttons can be hidden under the following conditions:

- The selected aircraft does not support Takeoff & Landing Performance.
- A non-performance tier account is being used to plan the flight.
- Runway data for the airport is unavailable.

![Takeoff & Landing Performance Buttons](image-url)
17. TAKEOFF & LANDING PERFORMANCE

17.3.1 Landing Performance View

The Landing Performance view is organized into five sections. The Landing Performance view is populated with the latest runway, weather, and default aircraft configuration data.

Blue text in this view can be edited for hypothetical planning purposes or to accommodate circumstances that are unique to the flight. For example, if the runway’s usable length is reduced due to construction, you can manually edit the length to represent the available runway distance.
17. TAKEOFF & LANDING PERFORMANCE

17.3.2 Landing Performance Summary

A summary of the Landing Performance results is always visible at the top of the Landing Performance view.

The summary displays the planned landing weight, the distance required to land and stop the aircraft, and the landing reference speed. Complete results are available in the Performance section at the bottom of the Landing Performance view.

Performance Summary results are displayed when a runway is selected and are based on the aircraft’s default landing configuration, weather, and latest runway data. Performance results are updated each time a new landing runway is selected or a configurable field is edited.
17. TAKEOFF & LANDING PERFORMANCE

17.3.3 Landing Performance - Destination Runway

The Destination Runway section contains fields that define the runway environment. The fields in this section are automatically populated with the latest data and represent items that affect the selected aircraft’s takeoff performance.

Some aircraft do not provide performance data for common variables such as the runway’s surface condition (rain, snow, etc). As a result, if your aircraft flight manual does not include this data, the Destination Runway section will not include it either.

Destination Runway values can be overwritten to accommodate unique circumstances. To overwrite a value, tap the applicable field, enter a new value, and tap Close.

### Declared Distances

Declared runway distances are displayed at the bottom of the section.

- **TORA** - The portion of the runway suitable for the takeoff ground roll.
- **TODA** - Takeoff Distance Available (includes stopway and clearway).
- **ASDA** - Accelerate Stop Distance Available (includes stopway).
- **Stopway** - Paved area beyond TORA that can be used for stopping during a rejected takeoff.
- **Clearway** - Unpaved area clear of obstacles beyond the runway that can be used for a portion of the initial climb.
- **LDA** - Runway Landing Distance Available.
17. TAKEOFF & LANDING PERFORMANCE

17.3.4 Selecting a Destination Runway

To select a destination runway, tap the Runway field and select a runway from the list. Each available runway for the airport is included in the list even if the runway is closed. When a NOTAM is issued to close a runway, a Closed tag is displayed next to the runway name. If a runway’s usable length is reduced due to a NOTAM, the reduced usable length is not automatically reflected in the Destination Runway section.

When weather data is available via the internet, ADS-B, or XM, the wind component for each runway is displayed. Headwind components are displayed in green, tailwinds in red, and crosswind components in grey. The weather used to determine the wind component is displayed below the list of available runways.
17. TAKEOFF & LANDING PERFORMANCE

**Runway Details**

When selecting a runway, the **Details** button opens a new view with additional runway information including:

- Surface dimensions
- Surface type and condition
- Wind components
- Glide Slope Indicators
- Slope
- Magnetic heading
- Lighting
- Elevation
- Available procedures

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**Runway Detail View**

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ForeFlight Mobile Pilot’s Guide
17. TAKEOFF & LANDING PERFORMANCE

17.3.5 Landing Performance - Weather

The Weather section displays the destination airport's latest METAR, TAF, MOS, or general forecast based on weather data availability and the flight’s estimated arrival time.

If the airport does not provide weather information, Landing Performance uses the appropriate weather from a nearby airport. Each field in the weather section can be manually edited. The weather source and raw text are displayed at the bottom of the weather section.

<table>
<thead>
<tr>
<th>WEATHER</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind Direction</td>
<td>USE °M 100°T</td>
</tr>
<tr>
<td>Wind Speed</td>
<td>7 kts</td>
</tr>
<tr>
<td>Temperature</td>
<td>90°F</td>
</tr>
<tr>
<td>Altimeter</td>
<td>USE hPa 29.92 inHg</td>
</tr>
</tbody>
</table>

Takeoff Performance Weather Section (KHOU TAF)

Temperature

The Terminal Aerodrome Forecast (TAF) does not provide temperature data. If Takeoff & Landing Performance indicates weather data is provided by a TAF, temperature from the MOS forecast will be used. When the MOS forecast issues a range of temperatures, the maximum temperature in the range is used.
Custom Weather

Each field in the weather section can be edited to allow for scenario planning. When a weather field is edited, the source and raw text at the bottom of the section change to “Using Custom Weather”.

When custom weather information has been entered, the results are updated and the edited values are used throughout Landing Performance. For example, if Wind Speed is manually edited, the wind components are updated to reflect the custom weather when selecting a runway.

Wind Direction

Wind Direction is given relative to true north by default. To use magnetic winds, tap the Use ºM button. Using magnetic winds changes the weather source to custom.

Altimeter

Altimeter information can be displayed in inches of mercury (inHg) or hectopascal (hPa). To convert from one unit to the other, tap the button in the altimeter field.

Weather Reset

To revert the weather back to the current METAR or forecast weather after making edits, tap the Reset button in the top right corner of the Weather section.
17. TAKEOFF & LANDING PERFORMANCE

17.3.6 Landing Performance - Aircraft Configuration

The Aircraft Configuration section is populated with the planned landing weight and default values from the aircraft’s Field Performance settings.

Each field in the section can be edited to accommodate a non-standard landing configuration. Adjusting the aircraft’s landing configuration from this view updates the planning results and not the aircraft’s default configuration.

Safety Distance Factor

The Safety Distance Factor is a user-specified safety margin. The Safety Distance Factor has a minimum and default value of 1.0 and can only be edited on a per-flight basis.

When a value other than 1.0 is entered in the Safety Distance Factor field, all distance results are multiplied by the user-specified amount. For example, to add a 25% safety margin to all results, enter a Safety Distance Factor of 1.25. To revert back to the original calculations, change the Safety Distance Factor to 1.0.

Adding a Safety Distance Factor
17. TAKEOFF & LANDING PERFORMANCE

17.3.7 Landing Performance - Performance Details

The Performance section includes results for the selected runway given the planned weather and aircraft configuration. Performance results are interpolated from flight manual performance data and are not physics-based.

The items in the Performance section vary by aircraft type and represent the information found in the aircraft flight manual (including the name of the performance parameter).

<table>
<thead>
<tr>
<th>PERFORMANCE</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>50ft Speed</td>
<td>92 kias</td>
</tr>
<tr>
<td>Total Distance</td>
<td>1,789'</td>
</tr>
<tr>
<td>Ground Roll</td>
<td>1,112'</td>
</tr>
<tr>
<td>Go-Around Climb Speed</td>
<td>92 kias</td>
</tr>
<tr>
<td>Go-Around Climb Rate</td>
<td>1,453 fpm</td>
</tr>
<tr>
<td>Go-Around Climb Gradient</td>
<td>14.7%</td>
</tr>
</tbody>
</table>
### Landing Output Labels

This table lists generic landing output labels used for most aircraft, though not all aircraft provide every output label, and some aircraft have specific output labels that apply only to that aircraft and are not listed here. Consult your aircraft’s POH or AFM for further detail on the specific aircraft configuration used for these outputs.

<table>
<thead>
<tr>
<th><strong>Landing Output Label</strong></th>
<th><strong>Description</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>50 ft Speed (or Approach Speed)</td>
<td>Target threshold crossing speed for landing and at 50 ft AGL (obstacle height point). Typically referred to as the reference speed ($V_{REF}$), some manuals call it the approach speed ($V_{APP}$).</td>
</tr>
<tr>
<td>Total Distance</td>
<td>Landing distance from 50 ft AGL obstacle height point (over approach end runway threshold) until full stop is reached. Consists of air portion with flare, touchdown and stopping portion.</td>
</tr>
<tr>
<td>Ground Roll</td>
<td>Landing distance from touchdown point on the runway until full stop is reached.</td>
</tr>
<tr>
<td>Go-Around/Balked Landing Climb Speed</td>
<td>Target go-around speed, typically in landing flap/gear configuration.</td>
</tr>
<tr>
<td>Go-Around/Balked Landing Climb Rate</td>
<td>Go-around climb rate in ft/min. Consult POH for flap and gear configuration.</td>
</tr>
<tr>
<td>Go-Around/Balked Landing Climb Gradient</td>
<td>Go-around climb gradient (rise/run). Consult POH for flap and gear configuration.</td>
</tr>
</tbody>
</table>
17. TAKEOFF & LANDING PERFORMANCE

17.4 Takeoff & Landing Summary Document

Takeoff & Landing Performance includes a summary document. The document includes a climb performance table (when climb data is available) and Takeoff & Landing Performance data for all selected runways. If an emergency return runway or an alternate airport runway is not selected, the summary document does not include this information.
17. TAKEOFF & LANDING PERFORMANCE

17.4.1 Generating the Summary Document

To generate the Summary Document, select Takeoff & Landing Performance runways for the departure, destination, and alternate airport. Tap **Summary** in the upper-right corner of the Takeoff or Landing Performance view.

![Generate Summary Document](image)

17.4.2 Summary Document Options

The Summary can be annotated, shared, printed, or attached to a Flight by tapping the share button in the upper-right corner when viewing the document.

![Share Button](image)
BRIEFING

ForeFlight Briefing provides a graphical and translated weather briefing. You can switch between HTML and PDF formats by selecting More > Settings > Flights > Briefing Format.

ForeFlight Briefings are included in ForeFlight’s Sync system, so any briefing you retrieve on one device or ForeFlight Web will also become available on all your other signed-in internet connected devices. You can tap on any graphic in the Briefing to view it in full screen, and double-tap or pinch to zoom.
18. BRIEFING

18.1 About the Design

ForeFlight Briefing is organized into sections that can be accessed by tapping the Menu button in the upper-left corner of the screen, or by swiping right. This opens a sidebar with a summary of the briefing at the top, followed by the list of sections. Sections with a carat next to them contain subsections which can be accessed by tapping the section to expand it. Tapping on a section with no subsections will take you to that page of the briefing. Orange dots indicate that a section (or one of its subsections) has not been viewed. Swipe left or tap the “X” button next to the sidebar to hide the menu.

At the bottom or bottom left of each page is the “Next” button, which shows what the next page in the briefing is. Tap it to move to the next page, or tap the smaller “Back” button to its left to move back one page.

18.1.1 Translated Text vs Raw Text

Most pages in the briefing allow you to view both the raw text of the briefing and the translation of that text. On split-screen pages like those in the Adverse Conditions section or the Synopsis page, you can view the raw text by tapping “Show Raw Text” at the bottom of the right column. On full-screen pages like the METARs, TAFs, or NOTAMs pages, a “Plain Text” slider at the top right of the page allows you to toggle the text between raw and translated. The position of this slider is retained between pages in the same briefing.
18. BRIEFING

18.2 Briefing Sections

The following sections are included in a ForeFlight Briefing

18.2.1 Adverse Conditions

The Adverse Conditions section includes important safety advisories such as TFRs, closed/unsafe NOTAMs, and AIRMETs and SIGMETs.

These pages are laid out in a split-screen view: on the left is a list of selectable advisories with basic information about each, and on the right is more detailed information about the selected advisory, including the translated text and a map showing the advisory against your route of flight.

The time at which the advisory is active is shown at the top, and below that is the time interval during which you will pass the advisory. This interval is color-coded based on how close your passing time is to the time at which the advisory is active: Green means the advisory won’t be active during or near your passing time, Orange means the advisory will be active near your passing time, and Red means the advisory will be active during your passing time.
18. BRIEFING

18.2.2 Synopsis

The Synopsis page provides an overview of the weather trends for each geographical area through which your route passes. As with the Adverse Conditions section, you can select each area’s forecast from a list on the left, and read the translated text of that forecast on the right. At the top of the left column is the most recent Surface Analysis Chart for the Continental US published by the National Weather Service.

18.2.3 Current Weather

The Current Weather section includes information on current conditions along your route.

The METARs page shows the most recent METARs issued for the airports along your route. At the top of the page is a map showing your route and colored bubbles indicating the flight category at each airport. The coloring for the bubbles is the same as what is used in the Flight Category layer on the Maps view.
18. BRIEFING

18.2.4 Forecasts

The Forecasts section includes information on forecasted conditions along your route. The Cloud Coverage and Vis, Sfc Winds & Precip sections provide graphics showing forecasted cloud coverage and forecasted visibility, surface winds, and precipitation, respectively. Graphics are provided for every region within the continental United States that your route passes through, for all times that your flight is active.

The TAFs page displays TAFs for every airport that issues them along your route. Like the METARs page, it includes a map at the top showing your route and flight categories that correspond to the TAFs that will be valid for each airport during your passing time.

Below the map is a list of TAFs that will be valid at or near the time you pass each airport. Highlighted TAFs will be valid at the time of your passing, which is shown in a box on the left.
18. BRIEFING

18.2.5 Wind Charts

The Wind chart shows forecasted winds along your planned route. The Height is the enroute altitude in nearest thousands of feet. Latitudes are listed across the top and bottom of the map and Longitudes are listed on each side of the map.

The winds barbs point to the direction that the winds are blowing from. The barbed end points towards the “from” direction and the dotted end points towards the “to” direction. Short barbs indicate 5 knots of wind. Tall barbs indicated 10 knots. Triangular (or pennants) barbs indicate 50 knots. Simply add the sum of the values represented by the barb symbols to determine the wind speed.

The digit next to each wind barb is the temperature in Celsius and is negative unless a "+" is noted next to the number.

The Vertical Cross Section Chart is evenly divided into 15 segments covering the entire planned route (in this example KASH-KCLL). The divisions do not necessarily correspond to waypoints in the route.

The Tropopause altitude is shown in red numbers at the top of the chart, and if the chart scale permits, as a dashed red line.

The arrow bisected by a line icons represent the direction of North relative to your direction of flight for that segment. The direction of flight is from the left of the page to the right:
18. BRIEFING

The wind barbs are displayed as wind direction relative to your direction of flight. Each short barb represents 5 knots, each long barb 10 knots, so for example a long barb and a short barb is 15 knots. Pennants are 50 knots. If only a single line is plotted, the winds are calm.

Like the Wind Charts, temperatures in Celsius are shown next to each wind barb. Temperatures are negative unless a "+" is noted next to the number.

The blue curves with bisecting lines indicate forecast icing severity: trace, light, moderate, and severe.

Turbulence is depicted by colored boxes indicating turbulence EDR; the EDR scale is shown at the bottom of the page, and the EDR value is shown in the corner of each box.

The highest terrain along your route of flight (+0.1 degree LAT/LON) is shown as a dark green background in each block.

The Winds Aloft Table compares forecasted winds aloft at your filed altitude with winds aloft at other altitudes. Enable the switch in the top-right of the page to limit the altitudes shown to only those within 4,000’ of your filed altitude; disable it to show winds aloft forecasts for all altitudes.

Each column provides wind forecasts for different altitudes, and each row shows the forecasted winds at each waypoint in your route. If the switch in the top-right of the page is disabled, you can can swipe left and right on each table to view forecasted winds at altitudes that are more than 4,000’ from your filed altitude.
18. BRIEFING

18.2.6 NOTAMs

The NOTAMs section includes all the NOTAMs for your flight, apart from the closed/unsafe NOTAMs, which are found in the Adverse Conditions section.

Nearly all of these pages have the same layout, with a map showing your route at the top and the NOTAMs below. The only exception is the Enroute Obstruction NOTAMs page, which has a table at the top showing the total number of obstructions along your route, and how many of them are within 500 feet, 1000 feet, or beyond 1000 feet of your filed altitude, and how many have an unknown MSL altitude.
SCRATCHPADS

The ScratchPads tool lets you record PIREPs, ATIS broadcasts, and other aviation notes using ForeFlight Mobile instead of pen and paper.

ScratchPads are automatically synced between devices on your account. You can copy, delete, reorder, and save ScratchPads to your device directory. You can also share PDFs of any ScratchPad manually with other devices over the cloud and other apps on your device. If you have a Performance tier subscription, you can attach these PDFs to your flights.

19.1 About the ScratchPads View

ScratchPads are stored in a dedicated view on ForeFlight Mobile (iPad or iPhone). In the navigation toolbar, tap ScratchPads to see the available functionality and any existing ScratchPads arranged as thumbnail icons.
19. SCRATCHPADS

19.2 Selecting a Template

ForeFlight offers nine ScratchPad templates. Each one is an uneditable background image resembling a common aviation form (like a PIREP) or another tool (like a text document) to aid in note-taking. ForeFlight does not allow creating a custom template.

To select a template:

1. On the ScratchPads View, tap **New ScratchPad** or the + button in the upper-right corner of the device screen. (You can also tap the + button with another ScratchPad currently open.)

2. Select one of the nine available templates from the Choose A Template menu to open a new ScratchPad. The available templates include:

   - **Draw**: A blank canvas.
   - **Type**: A text document that uses the iOS keyboard instead of the Pen tool.
   - **Grid**: A square grid.
   - **CRAFT**: A form to record a clearance (Cleared to, Route, Altitude, Frequency, Transponder code).
   - **ATIS**: A form to record an Automatic Terminal Information Service (ATIS) broadcast.
   - **PIREP**: A form to record a Pilot Report (PIREP).
   - **Takeoff**: Has fields for V-speeds, departure clearance, and runway details.
   - **Landing**: Has fields for V-speeds, local conditions, and clearance information.
   - **Holding**: Has fields for location, direction, and altitude of the hold, and Expect Further Clearance (EFC) time.
19. SCRATCHPADS

19.3 Creating ScratchPads

ScratchPads can be written in one of two ways depending on the template selected.

19.3.1 Using the Pen Tool

The majority of templates use the Pen tool (or your finger) to draw annotations as if you were handwriting on a paper form. When using the pen tool, the color, thickness, and opacity can be edited.

To configure and use the Pen tool, follow these steps:

1. With a new ScratchPad open, tap the blue Pen icon in the upper-left corner.

2. In the Drawing menu, adjust the line controls as follows:
   - **Color**: Use a color grid, spectrum, sliders, or eye dropper tool.
   - **Opacity**: Use the slider to adjust from 10–100%.
   - **Thickness**: Use a slider to adjust from 0.1–40 pt.
   - **Order**: Configure the most recent marking to overlap above or below previous markings.
   - **Color Presets**: ScratchPads saves the most-recently set color and opacity values in the active (selected) preset. Tap a preset to reuse its saved values or to store another color/opacity combination for future use.

Drawing on the ATIS Template
19. SCRATCHPADS

19.3.2 Using Text

In the Type template, you use the iOS keyboard to write plain-text annotations. Tap anywhere in the template to bring up the keyboard and start typing.

![Writing on the Type Template]

19.4 Editing ScratchPads

Scratchpad annotations can be edited with the buttons in the upper toolbar. To edit the annotations:

- Tap the Eraser button to turn the Pen cursor into an eraser. Drag your finger over annotations to erase.
- Tap Clear to erase all annotations from the ScratchPad.
- Tap the Undo button once or more to undo recent annotations.
- Tap the Redo button once or more to redo changes that were recently undone.

**NOTE:** The Type template only supports the Clear operation, and the Undo and Redo operations only work on changes made since you last opened the ScratchPad.
19. SCRATCHPADS

19.5 Saving ScratchPads

After adding annotations to a ScratchPad, tap Close to save it. The new ScratchPad is listed as a thumbnail on the ScratchPads View, and it is synced automatically to all of your devices.

19.6 Renaming ScratchPads

The default name for each ScratchPad is the date and time that it was created or last edited. To rename the ScratchPad:

1. On the ScratchPads view, tap Edit.
2. Tap the blue name label at the bottom of the ScratchPad thumbnail.
3. Using the iOS keyboard, type a new name.
4. Tap Done (either on the keyboard or the top-left corner of the ScratchPads View).

Renaming a ScratchPad
19. SCRATCHPADS

19.7 Deleting ScratchPads

To delete ScratchPads, tap Edit on the ScratchPads view and perform one of the following operations:

- To delete an individual ScratchPad, tap the X icon at the top-left corner of its thumbnail, and then tap Done.
- To delete all ScratchPads at once, tap Delete All in the upper-right corner, and then tap Delete All again in the confirmation prompt.

19.8 Reordering ScratchPads

Individual ScratchPads are listed in order of their creation dates. To change this order:

1. On the ScratchPads View, tap Edit.
2. Tap and hold your finger on a ScratchPad thumbnail and then drag it to a new position.
3. When you have finished, tap Done.
19. SCRATCHPADS

19.9 Exporting ScratchPads

You can export a ScratchPad as a PDF to other locations on your device. To do so, follow these steps:

1. Open the ScratchPad you want to share.
2. Tap the Send-To button in the top-right corner.
3. Perform one of the following operations:
   - **Export to another iOS app**: Tap an app icon and follow its instructions. If you don’t see the desired app icon, tap More to see the whole list.
   - **Attach to Flights**: See the next section.
   - **Copy as PDF image**: Tap Copy.
   - **Save to device directory**: Tap Save to Files and select or create the destination directory.
19. SCRAPTOPADS

19.10 Attaching ScratchPads to Flights

Performance tier subscribers can attach ScratchPads to one or more flights. To do so, follow these steps:

1. Open the ScratchPad you want to attach.
2. Tap the Send-To button in the top-right corner.
3. In the Send-To menu, tap Attach to Flights.
4. In the Flights window, tap the Flight(s) you want to attach the ScratchPad to.
5. Tap Select Flight Plans.

The ScratchPad now appears as a PDF attachment on your flight(s). You can view it by clicking the file attachment button at the top of the Flight Summary pane.
CUSTOM CONTENT

The Custom Content feature allows custom map layers, charts, and user waypoints to be added to ForeFlight. The Custom Content view lists all custom content installed on the device. Select More > Custom Content to access the view.

The left side of the Custom Content View list four categories of custom content. Tapping a category displays the contents of the category in a detailed view on the right side of the screen. The four types of custom content are listed below.

- Custom Charts
- Custom Map Layers
- User Waypoints
- Content Packs

The Custom Content view can be used to access custom content, however the typical workflow involves accessing custom content from the Maps, Plates, and Airports views. Custom Charts, Custom Map Layers, and Content Packs do not sync between devices. User Waypoints sync to the devices signed into the account. ForeFlight Web does not support custom content.
20. CUSTOM CONTENT

20.1 Creating Custom Content

Custom Content can not be created in ForeFlight (with the exception of user waypoints). Custom content must be created with a 3rd-party program and imported to ForeFlight. This chapter provides a basic overview of creating and importing custom content.

20.2 User Waypoints

User waypoints can be created in ForeFlight Mobile using the Maps or Custom Content pages.

User waypoints are displayed on the map when the User Waypoint map layer is selected from the map drop-down menu. The black user waypoint icon is not customizable. For customizable user waypoints, see Custom Map Layers.

User waypoints can be entered in the route editor and used in flight plan filing.

20.2.1 User Waypoint Fields

User waypoints consist of four fields.

- **Name** - Must be minimum of 3 characters, all one word with no spaces. Names must contain at least one letter and should not duplicate an existing published waypoint’s name. Waypoint names can be entered into the flight plan editor for planning purposes.

- **Description** (optional) - User waypoint descriptions are displayed in the user waypoint pop-up when tapped. Descriptions support letters, numbers, and special characters.

- **Location** - Location is defined by latitude/longitude, point/radial/distance, or Military Grid Reference System (MGRS). When adding a user waypoint with Maps, the latitude/longitude is automatically populated.

- **Elevation** (optional) - The elevation field provides ForeFlight with elevation data for flight planning purposes. When an elevation is provided, flight planning results are more accurate. Entering an elevation also allows Profile View to display climbs and descents when the destination or departure are a user waypoint.
20. CUSTOM CONTENT

20.2.2 Creating User Waypoints - Maps View

User waypoints can be created on the Maps and Custom Content views. If a user waypoint’s coordinates are unknown, creating the user waypoint with the Maps view is recommended.

To create a user waypoint on the map:

1. Open the Maps view and zoom-in to improve waypoint accuracy.
2. Place and hold your finger on the map where you want to add the user waypoint.
3. In the sidebar, tap More and select Save.
4. Enter a name (recommended). If a name is not entered, the waypoint’s coordinates will be used.
5. Verify waypoint location on the map and manually edit coordinates if needed.
6. Enter an elevation in feet MSL (recommended).
7. Provide a description (optional).
8. Tap Save near the top of the pop-up.
20. CUSTOM CONTENT

20.2.3 Creating User Waypoints - Map Search

To create a user waypoint with search:

1. Open the Maps view and enter a location or point of interest in the search bar.
2. Locate and tap the location in the list of search results.
3. Tap Save near the top of the pop-up.
4. Edit the name if desired.
5. Provide an elevation (recommended).
6. Provide a description (optional).
7. Tap Save near the top of the pop-up.

NOTE: Tap/Hold the map to display elevation. Elevation is displayed next to the coordinates in the Add to Route menu and is the highest point within a 0.25 nm radius.
20. CUSTOM CONTENT

20.2.4  Creating User Waypoints - Custom Content View

To create a user waypoint using the Custom Content view:

1. Select More > Custom Content > User Waypoints.
2. Tap the [+] button in the upper toolbar.
3. Enter a name and location (required).
4. Enter an elevation (recommended), and provide a description (optional).
5. Tap Save near the top of the pop-up.

The user waypoint location field can be entered in the following formats:

- Place/bearing/distance - IAH/320/15 (IAH VOR, 320 bearing and 15 nm).
- Military Grid Reference System - 14RNU928366.
- Coordinates (see below).

**Supported Coordinate Formats**

Coordinates can be entered using any of the following formats. ForeFlight will automatically convert coordinates to display them in the format selected in More > Settings > Units/Time > Coordinates.

If no hemisphere is specified, ForeFlight defaults to the north and east hemisphere. Specify the southern hemisphere with a “-” prefix or “S” after the latitude. Specify the western hemisphere with a “-” prefix or “W” after the longitude.

- Decimal Degree - 30.158N/98.036W
- Decimal Minute - 3015.89/-9803.62
- Degree Minute Seconds - 301545N/980355W
20. CUSTOM CONTENT

20.3 Multiple User Waypoints (Bulk Import)

Multiple user waypoints can be imported in bulk via AirDrop, e-mail, file transfer, or as part of a Content Pack. Bulk user waypoints must be a Comma Separate Value (CSV) file or Keyhole Markup Language (KML) file.

CSV files can be created with spreadsheet programs like Microsoft Excel, Google Sheets, or Apple Numbers. KML files can be created with mapping programs like Google Earth or Google My Maps.

20.4 Creating CSV Files

User Waypoint CSV files must follow the formatting defined in this section. CSV files contain a single table with five columns. Each column defines one of the waypoint’s fields. CSV files do not need column names. Names in the example below are provided for informational purposes.

<table>
<thead>
<tr>
<th>NAME</th>
<th>DESCRIPTION</th>
<th>LATITUDE</th>
<th>LONGITUDE</th>
<th>ELEVATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>NORTH_BASE</td>
<td>North Base</td>
<td>29.243</td>
<td>-97.565</td>
<td>450</td>
</tr>
<tr>
<td>WD355</td>
<td>West Delta 355</td>
<td>27.443</td>
<td>-98.123</td>
<td>355</td>
</tr>
<tr>
<td>WEST_LAKE_FD</td>
<td>West Lake Fire</td>
<td>28.202</td>
<td>-90.788</td>
<td>1276</td>
</tr>
<tr>
<td>VFD23</td>
<td>Volunteer Fire Station</td>
<td>26.955</td>
<td>-93.544</td>
<td>2376</td>
</tr>
<tr>
<td>HOME</td>
<td>Home Sweet Home</td>
<td>29.512</td>
<td>-94.233</td>
<td>355</td>
</tr>
<tr>
<td>CP_23</td>
<td>Check Point 23</td>
<td>27.909</td>
<td>-91.110</td>
<td>2934</td>
</tr>
</tbody>
</table>

User waypoint CSV file fields

When creating a CSV file, each waypoint is defined on its own row. There’s no limit to the number of rows a file can contain. To create a user waypoint CSV file for bulk import, open a new spreadsheet with your preferred program. Add a single table with five columns. Add enough rows for the number of user waypoints in the file. Fill in the table with your user waypoint data. Only one table per file is supported.

Example CSV File
20. CUSTOM CONTENT

20.4.1 CSV File Field Formatting

CSV files must follow the formatting listed below. If a CSV file does not follow the formatting, it will not import to ForeFlight.

- **Name** (required): Must be formatted with the following properties:
  - Minimum of 3 characters including at least one letter. For example, “12A”.
  - All caps, for example "THE_CABIN", not “The_Cabin”.
  - No spaces between words. Use a "_" or "-" between words. For example, "THE_CABIN" or "THE-CABIN", not "THE CABIN".

- **Description** (optional): User waypoint descriptions are displayed in the user waypoint pop-up when tapped. Descriptions support letters, numbers, and special characters.

- **Latitude/Longitude** (required): Bulk importing user waypoints requires coordinate entry in the decimal degree format. Prefix latitude or longitude with a minus sign to notate the southern or western hemisphere (e.g. -97.711). If no minus sign is entered, ForeFlight assumes the north and east hemispheres.

- **Elevation** (optional): Enter elevation in feet without any additional notation.

20.4.2 Naming User Waypoint CSV Files

User waypoint CSV files must be named “user_waypoints.csv”. The file name should use lower case letters with no spaces. If a user waypoint file is not named properly, the waypoints will not be added to ForeFlight.
20.5  KML User Waypoints

KML is a robust mapping language used to display geographic data in a browser such as Google Earth. If you're new to KML, ForeFlight recommends the following resource: Google KML Tutorial.

ForeFlight supports basic KML features such as waypoints (placemarks), customizable icons, customizable labels, lines, and shapes. Files which only contain waypoints can be imported as a User Waypoint or Custom Map Layer file. If a file contains features other than just waypoints (lines or shapes), it can only be imported as a Custom Map Layer. This section discusses creating KML files for the purpose of bulk importing user waypoints. Icon and label color, size, and opacity changes are ignored when importing a KML file as user waypoints.

20.5.1 Creating KML User Waypoint Files

To create a KML user waypoint file, ForeFlight recommends using Google My Maps. Google My Maps is a simple, web-based mapping program www.mymaps.google.com.

To create a KML file with My Maps, select the add waypoint button and use the mouse to specify the location of the waypoint. Enter a name and description for the waypoint. Spaces in the name field are automatically replaced by an underscore when imported into ForeFlight. After entering a waypoint name and description, click Save.
Google My Maps does not include elevation data in the KML file. Elevation can be added to user waypoints after they've been imported in More > Custom Content > User Waypoints.

When all user waypoints have been added to the map, click the menu button to export the map layer as a KML/KMZ file. ForeFlight can import KML and KMZ files as user waypoints. It’s not necessary to specify a particular format. The format (KML or KMZ) is only applicable when importing a custom map layer with custom icons. See Custom Map Layers for additional information.

It’s not necessary to rename KML/KMZ files. File names are ignored when importing as a user waypoint file. If you have multiple user waypoint KML/KMZ files, renaming the file is recommended so the contents of the file can be easily identified. Save the file to your computer in preparation for importing it to ForeFlight.

## 20.6 Importing User Waypoints

User waypoints can be added to ForeFlight by incorporating them in a Content Pack or by importing them as stand-alone files. If user waypoints are added via Content Pack, the date the file was added is listed in More > Custom Content. Other than the Date Added field, there’s no difference in how the waypoints are displayed in ForeFlight Mobile.

When a standalone CSV or KML file is imported, the waypoints are appended to the existing user waypoint list. During the import process, the current user waypoints are compared to the waypoints in the CSV/KML file. Duplicate waypoints are not appended to the waypoint list.

User Waypoints imported via Content Pack are not appended to the user waypoint list.
20.6.1 Importing a CSV or KML/KMZ file

To import a stand-alone user waypoint file, share the file to your iPad/iPhone via one of the supported methods. ForeFlight supports AirDrop, e-mail, and file transfer.

When opening a CSV or KML/KMZ file on an iPad or iPhone, a list of installed apps which are capable of importing the file are listed. Select ForeFlight from the list of installed apps.

After selecting ForeFlight, the app will automatically open and provide prompts for importing. If a KML/KMZ file containing only waypoints is imported, ForeFlight will display a menu for importing the file as a Custom Map Layer or User Waypoint. Select User Waypoints to append the waypoints to the current user waypoint list.

If a KML/KMZ file with lines or shapes is imported, Custom Map Layer will be the only option. If a CSV user waypoint file is imported, User Waypoints will be the only option.

Once the file has been imported, the waypoints can be displayed on the map by selecting User Waypoints from the map drop-down menu.
20.7 Custom Map Layers

Custom map layers can display shapes, lines, custom icons, and custom labels. Multiple custom map layers can be installed and displayed simultaneously on a device. Custom map layers are selected from the right column of the map layer drop-down menu. Each map layer can have a unique name. ForeFlight supports KML, KMZ, and geoJSON custom map layers.

20.7.1 Creating Custom Map Layers

There are various programs that allow you to build and export custom map layers. ForeFlight recommends using the Google Earth Pro desktop app. Google Earth Pro can export custom map layers in the KML and KMZ file format. If you're new to KML, ForeFlight recommends the Google KML Tutorial.

This section provides basic instruction for creating custom map layers with Google Earth Pro. For detailed instructions, the Google Earth Learn website is recommended.
20. CUSTOM CONTENT

20.7.2  Supported Data Types

KML is a robust mapping language that supports a large variety of features. For example, KML can specify camera perspectives, time-dependent features, and even guided tours. ForeFlight only supports a small sub-set of all KML features.

If you import a file that includes a KML feature that is not listed below, the unsupported feature is ignored by ForeFlight. ForeFlight supports the following KML features.

- Waypoint
- LineString
- LinearRing
- Polygon
- MultiGeometry
- Style
- StyleMap (normal)
- LineStyle
- PolyStyle
- IconStyle
- gx:LabelVisibility

20.7.3  Waypoints

One of the more common custom map layer features is the waypoint. Waypoints are displayed as icons on the map. Waypoints can be added to the route editor for planning purposes and used in flight plan filing. To create a custom map layer with waypoints, click the Add Placemark button in the Google Earth Pro upper toolbar.

Add Placemark

Google Earth Pro Toolbar

After clicking the placemark button, drag the waypoint icon to the appropriate position or manually enter the waypoint’s latitude/longitude. Enter a waypoint name and description. Custom map layer names do not have to be a single word.

Select a supported icon for the waypoint or use a custom icon and click OK. Waypoint icons are discussed on the following pages.

KML/KMZ files exported from Google Earth do not include elevation data.
Waypoint Descriptions

The waypt description field in ForeFlight supports text and basic HTML formatting. HTML is not required, however when it’s used, it allows the look of the description field to be customized. HTML elements such as links, line breaks, headings, font color, and size are supported.

To customize the description section of a waypoint, add the HTML directly to the description field in Google Earth Pro.

To view HTML formatted text in ForeFlight, tap the custom waypoint on the Maps view and tap More Details in the Description section of the pop-up.
Waypoint Icons

ForeFlight only supports select Google Earth waypoint icons. If an unsupported icon is selected, the default icon is used.

When choosing a waypoint icon, select a supported icon or use the **Add Custom Icon...** option at the bottom of the icon menu.

To select a waypoint icon, click the icon button in the upper right corner of the waypoint menu and select an icon from the subsequent page. Once an icon has been selected, click OK.
20. CUSTOM CONTENT

Supported Icons

The image below depicts the icons that are supported in ForeFlight Mobile. Use the Add Custom Icon button at the bottom of the menu to use an image from your computer as the waypoint icon.
20. CUSTOM CONTENT

Custom Icons

For best results, custom icons should be PNG image files with transparent backgrounds. The image should be approximately 100 pixels by 100 pixels.

When using a custom icon, your map layer must be saved as a KMZ file. KMZ files are zipped files with KML map data and the custom icon image files.

20.7.4 Label and Icon - Style and Color

Label and icon color, size, and opacity can be customized. To make style adjustments, select Style, Color from the Google Earth waypoint menu. Not all customization fields are supported in ForeFlight. See the following pages for additional information.
20. CUSTOM CONTENT

**Color and Opacity**

Waypoint icons and their associated labels share color and opacity attributes. To adjust the color or opacity of a waypoint, use the *Icon* settings in Google Earth to make adjustments. When using a supported icon, it's not possible to differentiate the color or opacity of the waypoint icon and its label.

![Icon and label with 50% opacity](image)

**Green icon and label with 50% opacity**

**Scale**

Icon and label scale (size) can be independently adjusted. The maximum label scale is one. A label scale greater than one will not be reflected in ForeFlight.

Specifying a label scale of zero results in the label not being displayed. If the label is not displayed, the waypoint’s name can still be used for flight planning purposes. To create a map layer with only icons, set *label scale* to zero as in the image below.

There is no upper limit for *icon* scale. An icon scale greater than one results in a larger icon in ForeFlight. To display a label without an icon, use the **Add Custom Icon** option and use a blank image.

![Icon Only Waypoint - Label scale equal to zero](image)
20. CUSTOM CONTENT

20.7.5 Lines

Custom map layers can depict lines. Lines can be included in the same file as
waypoints and custom shapes. To add lines to a custom map layer, select the Add
Path button in the Google Earth Pro upper toolbar.

Google Earth Pro Toolbar

Use the mouse and cursor to add points to the path. Adjust line width and color by
selecting Style, Color. When all points have been added, click OK.

It’s not necessary to provide the path with a name as ForeFlight will ignore it. The
KML/KMZ file name is what will appear in the map drop-down menu.
20. CUSTOM CONTENT

20.7.6 Shapes

Custom map layers can depict shapes. Shapes can be included in the same file as waypoints and lines. To add shapes (Google Earth Polygons), select the Add Shape button in the Google Earth Pro upper toolbar.

Google Earth Pro Toolbar

Use the mouse and cursor to add points to the shape. Adjust the appearance of the shape with the line and area settings in Style, Color. When all points have been added, click OK.

ForeFlight does not recognize a shape’s name. To display a name over the center of a shape, add a custom waypoint (placemark) with the shape’s name.
20. CUSTOM CONTENT

20.8 Importing Custom Maps

Custom map layers can be imported via Content Pack or as a stand-alone file. To import a custom map, it must first be exported. To export a custom map layer, right-click the folder that contains the custom data.

Map layers and folders are displayed in the left column of Google Earth Pro under the Places menu.

Select Save Place As.... and provide a name for the file. The file’s name is what will appear in More > Custom Content > Custom Map Layers and in the map layer drop-down menu.

If the file contains custom icons, ensure the KMZ file format is selected. After exporting the file to your computer, share the file to your iPad/iPhone via AirDrop, Email, or File Transfer.

When your iPad/iPhone receives the file, a list of installed apps which are capable of importing the file are listed. Select ForeFlight from the list of installed apps. ForeFlight will automatically open and provide prompts for importing the custom map.

Once the map has been imported, it can be selected from the map drop-down menu. Select More > Custom Content > Custom Map Layer to share, delete, or show the map layer.

Custom Map Layer with Waypoints, Lines, and Shapes
20. CUSTOM CONTENT

20.9  Custom Charts

The Custom Charts feature allows you to import custom georeferenced charts in MBTiles, Geospatial PDF, or GeoTiff (MFB only) format. Custom charts can be displayed on the Maps view on top of other charts. Multiple custom charts can be displayed simultaneously on the map.

ForeFlight can not create custom charts. If a chart does not contain geospatial information, a 3rd-party program can be used to add the data. ForeFlight recommends Map Tiler for creating MBTile custom charts and QGIS for creating geospatial PDF. For additional information, see our Custom Content Support Page.
20. CUSTOM CONTENT

20.10 Custom Plates (BYOP)

The Bring Your Own Plates (BYOP) feature allows you to add PDF plates to published airports, heliports, and private airports. Common BYOP plates include airport diagrams, private terminal procedures, arrivals, departures, or any other plate needing to be associated with a published airport. It’s possible to import custom plates via Content Pack and as stand-alone files. Importing custom plates via Content Pack is recommended and discussed in this chapter.

Custom plates are accessed from the Plates, Airports, or Maps procedure view similar to published procedures. If the BYOP plate is georeferenced, the plate is able to be sent to the Map with a Pro Plus or higher subscription. If a plate is not georeferenced, geospatial data can be added to the PDF with various mapping programs. For more information, visit the How do I create a Geospatial PDF support article.

20.10.1 BYOP Naming Convention

Adding a plate to an airport or heliport is done by renaming the plate according to a specific naming convention. BYOP file names contain three elements separated by underscores. (e.g., AirportCode_CategoryName_Procedure Name.pdf). Plates must end with a .pdf extension. The three naming elements and examples are listed below.

- **Four character ICAO airport/heliport code**: ICAO codes should be all caps with no spaces immediately followed by and underscore. (e.g., KLAX, 38TE)

- **Procedure Category**: Procedures are divided into four categories by default: Airport, Departure, Arrival, and Approach. Custom plates can be added to the existing categories. If the category name is omitted, a fifth category is created by ForeFlight. The fifth category is named Other and any plate without a specified category is added to this folder.

  If a category name other than one of the four existing categories is used, a custom procedure category is created in ForeFlight for the airport/heliport. See the example on the following page.

- **Procedure Name**: The procedure name supports letters, numbers, and special characters. The procedure name should be entered exactly as it is to appear in ForeFlight (e.g., COPTER RNAV 09 APPROACH, Ramp Operations).
20. CUSTOM CONTENT

BYOP Examples

In the example below, the first plate (38TE_Approach_Copter RNAV 08 Approach) is added to the existing Approach category (left image).

The second plate (KAUS_Flight School Procedures_Ramp Procedures) creates a custom category for Austin International Airport (right page) and adds the Ramp Procedures plate to the category.

BYOP Subfolder

38TE Copter Approach

KAUS Flight School Procedures
20. CUSTOM CONTENT

20.10.2 Importing Plates (BYOP)

Standalone BYOP files can only be imported via wired connection, using Finder (MacOS Catalina 10.15 or later) or iTunes (MacOS Mojave 10.14 or earlier).

To import BYOP files without using Finder or iTunes, the files must be imported via Content Pack. For information on importing standalone BYOP files, refer to the BYOP Support Page.
20. CUSTOM CONTENT

20.11 Content Packs

A Content Pack is a single file that can contain various types of custom content. Content Packs are easy to create, install, share, manage, and delete. Content Packs add additional capabilities to the custom content features, including the ability to associate files with the waypoints in custom map layers.

Content Packs can range from a basic list of user waypoints to complex bundles of geo-referenced charts, plates, map layers, and linked files. Content Packs are listed in the left column of the Custom Content view. When tapped, the contents of a pack are listed in the detail view.

Multiple Content Packs can be installed on a device. Content Packs are available to all individual subscribers and Performance level business and MFB subscribers. Example Content Packs can be found at www.foreflight.com/support/content-packs.
20. CUSTOM CONTENT

20.11.1 Package Contents

Content Packs can contain multiple types of custom content. There’s no limit to how many custom content types a Content Pack can have. Content Packs must be 2GB or smaller and must contain at least one type of custom content. The following custom content can be added to a Content Pack.

- Custom Charts
- Map Layers
- User Waypoints
- Associated Files
- Plates (BYOP)

20.11.2 Creating Content Packs

Content Packs can not be created with ForeFlight. To create a Content Pack, you’ll need to use a computer. To create a Content Pack, begin by dragging and dropping custom content to the appropriate subfolder as described in this section.

Content Pack Structure

Content Packs have a main folder and up to three subfolders. The subfolders are placed into the main folder and must be named exactly as depicted below. If a subfolder is empty, it is not necessary to include it in the Content Pack.

The main folder becomes your Content Pack once all custom content is added. The main folder does not have a specific naming requirement. Assign the main folder a name that is easily recognizable. The main folder (Content Pack) name is displayed in ForeFlight.

Content Pack Folder Structure

- Main Folder
- byop
- navdata
- layers
20. CUSTOM CONTENT

20.11.3 Adding content to subfolders

The type of custom content determines which subfolder it’s placed in. Add custom content to subfolders per the image below. Each subfolder which contains custom content should be placed in the main Content Pack folder.

- Custom Plates
- MBTile Custom Charts
- GeoPDF Custom Charts
- GeoJson Custom Charts
- Map Layers (KML/KMZ)
- GeoJson Map Layers
- Associated Files
- User Waypoints

Content Pack Folder Structure

20.11.4 Manifest

Content packs can also include an optional manifest. The manifest provides information about the content pack to help distinguish it from other content packs. Information specified in the manifest is displayed at the top of the Content Pack details view in More > Custom Content.

Manifests are placed in the main Content Pack folder. If you don’t include a manifest, ForeFlight will use the Content Pack’s file name by default.
20. CUSTOM CONTENT

Manifest Structure

The manifest JSON file has the following structure:

{
  "name": "Sample Content Pack",
  "abbreviation": "FFCP.V2",
  "version": 2.0,
  "expirationDate": "20230101T00:00:00",
  "effectiveDate": "20220101T00:00:00",
  "organizationName": "ForeFlight"
}

Effective & Expiration Dates

You may specify effective and expiration dates in a content pack's manifest. The dates are depicted in the content pack's detail view. ForeFlight will also display red warning text in both the expiration date field and the content pack's summary in the left-hand list for any content pack that has passed its expiration date.

If the content pack includes plates within the byop folder, expired plates will display a red "EXPIRED" banner at the top of the Plates view. Expired content packs remain fully functional. The red banners only serve as a notice to the user that the Content Pack expiration date has passed.

Dates must be specified using the format "YMMDDThh:mm:ss", where Y=year, M=month, D=day, h=hour, m=minute, and s=seconds. Single digit months, days, hours, minutes, and seconds should be preceded by a single 0 character. The "T" in the string date is required, and is a delimiter that separates the date portion from the time portion (see the example manifest JSON above). Both times are interpreted in relation to the device’s local time setting, unless a "**Z***" suffix is added to indicate zulu time, as in: "YMMDDThh:mm:ss**Z***"

For ForeFlight Military Flight Bag customers, special logic has been implemented to impose an expiration date on Giant Report zip files downloaded from the NGA aerodata website. Any content pack with a file name formatted as “Giant_Reports-YYYY-MM-DD” will automatically be assigned an expiration date corresponding to 8 days after the publication date identified in the file name.
20. CUSTOM CONTENT

20.11.5 NavData

The navdata subfolder contains custom map layers, user waypoints, and files that are associated with map layer waypoints.

**Content Pack Map Layers**

Custom map layers imported via Content Pack behave similar to map layers imported as standalone files. The exception is that map layers imported via Content Pack can have waypoints that are linked to supporting files (associated information).

**Content Pack User Waypoints**

User waypoints imported via Content Pack are not appended to the user waypoint list. As a result, user waypoints imported via Content Pack are not synced to the account. A user waypoint file added via Content Pack is selectable from the map layer dropdown menu. The CSV file name appears in the map layer dropdown menu.

**Associated Information**

Files that are related to a waypoint in a KML, KMZ, or geojson map layers can be added to the navdata subfolder. Associated files can be image or PDF documents. Adding a file to the navdata subfolder allows you to select the file for viewing from the Maps page.

Associated files are linked to waypoints by their naming convention. To link a file to a waypoint, use the following file naming convention: “Waypoint _Name Document Description”.

The waypoint name and document description are separated by a space. For example, a document named “H413 Aerial View” links the “Aerial View” file to the H413 waypoint.
20. CUSTOM CONTENT

The first component of a document’s name (H413) links the document to the waypoint in the custom map layer. The waypoint name in the associated file should match the waypoint name in the custom map layer.

The second component of the file’s name is what will be displayed in the waypoint’s slide-over menu. In the image below, note how multiple associated files are linked to the waypoint H413. Each file is accessible by tapping the waypoint on the map. The document description is displayed in ForeFlight exactly as the file is named (e.g. Aerial View, Hospital Plate, Ground View).

Associated PDF, PNG, and IMG files can be accessed from the map by tapping the custom map layer waypoint icon and selecting an associated file. Tapping an associated file opens the file in the Documents view.

![H413 Waypoint with Associated Information](image)
20. CUSTOM CONTENT

20.11.6 Layers
The layers subfolder contains custom charts. Custom charts in content packs operate the same as they do on their own. Content packs support the following types of map layer files: MBtiles, FBtiles, geospatial PDF, KML, and GeoJSON.

MBtiles, FBtiles, and geospatial PDFs appear at the bottom of the left column in the Maps layer selector, and KML and GeoJSON files appear in the bottom of the right column.

20.11.7 Importing Content Packs
Before a Content Pack can be imported, it must be compressed (zipped). Compress the main folder of the Content Pack and share the zipped file to your device via one of the supported methods. Files can be compressed by right-clicking the Content Pack's main folder and selecting **compress** from the menu.

Content Packs can be imported via AirDrop, Mail, web browser, hyperlink, and cloud document drive (DropBox, Box, S3). Once a Content Pack has been shared with the device, a menu appears that lists all installed apps capable of importing the Content Pack. Select **ForeFlight** from the list of installed apps.

After selecting ForeFlight, the app will automatically open and import the Content Pack. Once the Content Pack is installed, a confirmation message will appear with options to dismiss the message or view the Content Pack. Selecting **View** in the pop-up menu displays the Content Pack in **More > Custom Content**.

**Importing/Hosting via Hyperlink**
If you have a content pack hosted somewhere that you want to make available for download in ForeFlight, you can configure the hyperlink to make the content pack download through ForeFlight using this URL scheme: “https://foreflight.com/content?downloadURL=<The URL to the Content Pack location>”.

When someone long-presses on this link on a device with ForeFlight installed, the option to open ForeFlight appears and automatically adds the content pack as a new download in More > Downloads.

To see this in action, long-press on **this link** on an iOS device with ForeFlight installed and tap "Open in ForeFlight". You can also tap on the link and swipe down on the next page (a 404 page) to find the "Open in ForeFlight" banner at the top of the page.
20. CUSTOM CONTENT

20.11.8 Content Pack Cloud Drive Integration

If you have a Pro Plus, Performance Plus, Business Performance or MFB Performance plan, you can import content packs into ForeFlight using a linked cloud storage account (Dropbox, Box, or Amazon S3). Importing via cloud drive is the recommended method for multi-pilot accounts.

To import Content Packs via Cloud Documents, add a folder named “contentpack” to the folder you use to import documents. The content pack subfolder must be located in the root folder as depicted below.

- **Dropbox**: ~/Dropbox/Apps/ForeFlight/contentpack/
- **Box**: ~/Box Sync/ForeFlight/contentpack/
- **Amazon S3**: Add the “contentpack” subfolder to the drive used to import documents

Once the contentpack folder is created, add zipped content packs to the folder.

Individual files imported via cloud documents, including Content Packs, must be below 500MB in size.

**Automatic Content Pack Download**

Content Packs imported via cloud drive can be installed automatically or manually. To specify how Content Packs should be installed, log into ForeFlight Web from an administrator account and select **Account** (left sidebar) > **Integrations** > **Cloud Documents**.

**Automatic Content Pack Download Setting**
When automatic Content Pack downloads are enabled, users are prompted and required to download Content Packs. A red download badge is displayed for Content Packs that are uploaded to the document drive and not yet downloaded to the device. When deleting a Content Pack from ForeFlight Mobile, a prompt to reinstall the Content Pack is immediately displayed.

If automatic Content Pack downloads are enabled and **Automatic Downloads** are enabled on the device, Content Packs uploaded to the cloud drive will be automatically installed on the device when connected to the internet.

If automatic Content Pack downloads are disabled, users are not required to download Content Packs. Content Packs uploaded to the cloud drive appear as available for download in the **Custom Content** view but a badge is not depicted when new Content Packs are available.

**Updating Content Packs**

Content Packs can be updated by replacing the Content Pack in the cloud drive with a file with the same name. When Content Packs are replaced in cloud drives, ForeFlight installs the updated content pack and automatically removes the old one.

The old Content Pack is *not* removed if an updated Content Pack is installed with a different name. If updating a Content Pack via a method other than integrated cloud drive, ForeFlight does not automatically remove the old Content Pack.
TRACK LOGS

Track Logs record details about your flight including track and altitude using any compatible GPS, such as an external device like a Sentry, or your iOS device’s internal GPS. Track Logs are synchronized across your devices using Sync. Track Logs can be sent via email, are available for viewing and downloading at the ForeFlight website, and can be exported to apps like CloudAhoy and Google Earth, as well as to KML and GPX files. Track Logs can also be imported to ForeFlight Logbook as new entries if it is part of your subscription. Track Log files require less than 300KB per hour recorded.

21.1 Enabling Track Logging

Track Logs can be enabled for either manual or automatic recording. Tap More > Settings, then scroll to the Track Log section. To enable manual recording, switch Enable Start/Stop Control to ON. When this setting is ON, the REC button and a timer indicating the length of the current recording are shown in the lower-left corner of the Maps view above the zoom buttons. To enable automatic recording, switch Enable Auto Start/Stop to ON.

21.2 Start/Stop Logging

When automatic recording is enabled, a new Track Log is started as soon as the app detects a takeoff, which corresponds with a certain speed threshold. A new Track Log can also be started at any speed by tapping the REC button. In either case the REC button turns blue and the timer starts counting up, indicating the length of log file. The recording continues until the REC button is tapped again, or until the app detects a landing, which is also associated with a speed threshold.

With automatic recording, your location data prior to takeoff and after landing are added to the front and back of the Track Log, respectively, to account for taxiing. This extra recording time at the front of a Track Log is reflected in the timer upon takeoff.

When using the built-in GPS or a Bluetooth GPS, the recording will continue even if you switch to another app. NOTE: background recording is not currently available when using a Sentry or other Wi-Fi connected device for GPS. If you put ForeFlight Mobile in the background or quit it completely while recording a track log, the recording will stop or be incomplete.
21. TRACK LOGS

If you put ForeFlight Mobile into the background while logging, verify that the REC button is still blue (Recording) when you re-open ForeFlight Mobile.

21.3 Flight Time Instrument

Flight Time can be used in conjunction with track logging to display actual flight time. When Track Log recording is enabled, either manually or automatically, the Flight Time instrument will begin counting up from zero after you take off and continue counting until you land or the Track Log recording is stopped.

21.4 Track Log Listings

Tap More > Track Logs to see your list of recorded Track Logs. Each entry shows the date and length of the recording, the GPS source used when the Track Log was started, and the aircraft’s tail number. The aircraft’s tail number is determined by the following logic:

- ADS-B ownship detection (correlation between an ADS-B broadcast and matching GPS position).
- If no ownship is detected, the default aircraft profile.
- If ownship was not detected and no default aircraft is specified, the aircraft that is selected the most. If there is no commonly selected aircraft, Track Log will not auto-populate the tail number field.
21. TRACK LOGS

If a Track Log was used to create a Logbook entry, a small book icon is shown next to the name of the device that recorded the Track Log. You can search by departure or destination, aircraft, GPS source, and device name.

You can delete a Track Log using swipe-delete (swipe your finger from right to left across the listing). Once a Track Log is deleted, it is no longer available via Sync or on the ForeFlight website and cannot be recovered. Edits made to a Track Log are synced to the other devices on your account.

21.5  Graphical Track Log view

The Graphical Track Log view is a new, full-screen interactive view of a saved Track Log. Tap a Track Log to open the Graphical Track Log view.

The top of the Graphical view shows a map of the track log, that can be panned & zoomed.

The bottom shows a timeline-based graph with selectable information including Altitude, Speed, and if your Track Log was recorded with an AHRS-capable device like a Sentry: Pitch, and Bank. 2 combinations are selectable at a time.
## 21.6 Track Log Control Buttons

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Graph" /></td>
<td>Tap to hide/show the graph.</td>
</tr>
<tr>
<td><img src="image" alt="Play" /></td>
<td>Tap to start/pause the replay of the flight (at 20 times actual speed).</td>
</tr>
<tr>
<td><img src="image" alt="Fit to route" /></td>
<td>Tap “Fit to route” button to display the entire route.</td>
</tr>
<tr>
<td><img src="image" alt="Track Logs" /></td>
<td>Tap to return to the Track Log list.</td>
</tr>
<tr>
<td><img src="image" alt="Info" /></td>
<td>Tap for text information about the Track Log.</td>
</tr>
<tr>
<td><img src="image" alt="Send to" /></td>
<td>Tap the “Send to” button to share or export the Track Log, or create a Logbook entry.</td>
</tr>
<tr>
<td><img src="image" alt="Edit" /></td>
<td>Tap to Edit the Track Log by non-destructively trimming (adjusting) either or both of the start &amp; end points.</td>
</tr>
<tr>
<td><img src="image" alt="3D" /></td>
<td>Tap to open the 3D review of the Track Log (requires a Performance plan)</td>
</tr>
</tbody>
</table>

When viewing a Track Log, you can use two fingers to pinch-zoom (left-right) inside the Graph area to zoom-in on a particular area of the Track Log, and use one finger to scrub left or right in the Graph area to focus on different areas of the track log.

The area of track log in-view on the Graph area is shown on the map with a thicker blue line, and the areas outside of that area are shown with a thinner orange line.

Use 1 finger to scrub along the timeline to change the location of the aircraft and the corresponding vertical line in the Graph view.

Tap the “Info” button to open a pop-up where you can view and edit additional information about the track log, including a more descriptive name, the Pilot’s Name, the Tail Number, and Notes. If ForeFlight detects ADS-B Out capability for your aircraft it will automatically capture the tail number and add it to the Track Log.
21. TRACK LOGS

If you have a Performance Plan, tap the 3D button to open a 3D Review of the track log.

Switch between first person and third person views using the buttons in the lower-left of the screen, and use one finger to pan the view, and use two fingers to pinch-zoom.

Tap the AHRS button to switch between a “straight-and-level” view and a view showing the AHRS data recorded in the track log by a compatible device such as a Sentry.

21.7 Logbook Entries

If a Logbook entry was created from the track log, you can tap the row in the Logbook Entries section to display a popup with details of the Logbook entry.

21.8 Editing a Track Log

Tap the “Edit” button in the bottom-right of the Track Log Graph to enable non-destructive editing of either or both of the start and end of a Track Log. Drag the blue bars on the left and right side of the graph to adjust the track log’s start and end points.

When dragging the blue bars on the side of the graph, the revised start and end points are reflected in the overhead map at the top. The part of the Track Log between the blue bars is shown in blue in the overhead map and time slider, and the part(s) being trimmed are shown in grey, outside of the end markers.

While in Edit mode you can pinch to zoom within the Track Log Graph, and drag left or right to focus on different areas of the track log.
21. TRACK LOGS

Touch-hold on the graph or slide the time slider to display a movable cursor with “Start Here” and “End Here” buttons; tap either one to set the respective end of the track log at that point.

When you have finished editing, tap Done to confirm the new end points and update the Track Log Graph, overhead map, and track log metrics in the top-right menu.

If a Track Log is associated with a Logbook draft entry, trimming the Track Log will automatically update the auto-filled fields in the Logbook entry. Sending a trimmed Track Log to Logbook will use times based on the new end points for auto-filled fields.

To undo any edits, tap Edit, slide the blue bars to the far left & right of the graph, then tap Done.

21.9 Track Log Sync

Newly-recorded Track Logs are automatically uploaded to the ForeFlight Cloud when your device connects to the internet after a flight. You can then view and edit the Track Log’s information on other devices on your account, as well as import it to ForeFlight Logbook, share it on social media, view it on ForeFlight’s site, and email a link to the Track Log.

Emailing the full Track Log or opening it in another app on your device require that you download the Track Log’s file; a popup when selecting one of these options prompts you to download the Track Log.
21. TRACK LOGS

21.10 Internet Browser Summary

When viewing a Track Log’s details, tap the Send To button in the upper-right corner and tap the “foreflight.com” button to open Safari and view a summary of the flight on the internet browser.

Tap the Chart selection button in the upper-left corner of the map to choose between Street Map, Aerial (Satellite) Map, US VFR charts, and US IFR Low and High charts.

21.11 Sharing Track Logs

Track Log details can be shared via email, Twitter, and Facebook (provided you have set up your accounts in Apple Settings). Tap the Track Log entry, then tap the Send to button in the upper-right of the screen and choose how you would like to share the Track Log. You can also send the Track Log to your logbook, which creates a new entry and auto-populates it with the Track Log’s details.

NOTE: iOS 10 and earlier show Facebook and Twitter as separate items in the Send To menu; iOS 11 and later show an “Other” option which includes Facebook, Twitter, and others.

When sharing the full Track Log via email, a KML file of the Track Log is attached to the email, along with the a link to view basic information about the Track Log on the ForeFlight website.
21. TRACK LOGS

21.12 Exporting Track Logs to other Apps

Tap the Track Log entry, then tap the Send To button in the upper-right corner and tap “Open KML In...” to export the data to CloudAhoy, Google Earth, or other compatible apps.

Google Earth is an useful resource for viewing the 3-D view of the Track Log on your device.

21.13 Importing G1000 Track Logs

ForeFlight Mobile can import track logs recorded by a suitably-configured Garmin G1000, to simplify how you organize and access your recorded flights.

A suitably configured G1000 can save recorded track logs as CSV files on an SD card inserted into the top slot of the MFD. If you’ve already extracted these files onto your home computer or laptop, you can transfer them to ForeFlight Mobile via AirDrop, iTunes file transfer, or by sharing through email or other apps that you can access on your iOS device.

If your iOS device has iOS/iPadOS 13 or later you can also transfer track logs from an SD card using an adapter that matches your device’s data and charging port (Lightning or USB-C).

Insert the SD card from the top slot of the G1000 MFD into the SD card reader, then plug it into your iOS device. Then in More > Track Logs, tap the Import button in the center-top of the Track Logs page (on the right of the Track Log list) and tap “From G1000 (CSV File)”.

When the iOS Files view opens, tap Browse, then choose the USB icon to open the SD card, which will likely be named GARMIN. Tap the “data_log” folder, then tap on the track log you want to import.
21. TRACK LOGS

NOTE: If ForeFlight Mobile cannot successfully import a G1000 track log for any reason it will generate a text file explaining the error, along with the original track log in a zip file. Tap Export Now to share the zip file via AirDrop or other apps.

After tapping the track log to import, if you haven’t imported flights from that aircraft before, ForeFlight will prompt you to enter the tail number to associate with the track log. Future imports of G1000 track logs from that aircraft will not prompt for the tail number.
21. TRACK LOGS

After importing the track log, a “NEW” flag shows until you change away from the Track Logs page.

See all G1000 track logs that have been imported by entering G1000 in the Track Log “Filter”.

21.14 Track Logs on ForeFlight Web

Sign in to your ForeFlight account by clicking the Login button at www.foreflight.com, then click Track Log from the sidebar to view all of the Track Logs on your account. Click the track log you want to view from the list on the left.

Click on the Download button in the upper-right then choose one of the KML options, GPX, or CSV to download the Track Log file in that format.
FOREFLIGHT CONNECT

ForeFlight Connect allows ForeFlight Mobile to wirelessly connect to and exchange information with portable devices as well as panel-mount avionics to make flying easier, safer and more efficient.

22.1 Devices

The Devices view shows any connected devices explicitly supported by ForeFlight. The box for Sentry or other ADS-B receivers, Garmin Connext, and Flight Simulator data connections can be tapped for additional information.

The box for Bluetooth GPSs like the Bad Elf Pro, DUAL, and Garmin GLO indicates that the GPS is connected, but no additional information about the GPS, such as # of satellites or battery % is available. For that information, use the helper app provided by the GPS manufacturer.

22.1.1 Location Disabled / Troubleshooting GPS position issues

Check the following if your GPS position does not show in ForeFlight Mobile or if the “Location Disabled” popup displays:

Open Apple Settings, tap Privacy, then Location Services; or open Apple Settings, scroll down on the left to the list of apps, and tap ForeFlight.

Confirm that Location Services are ON, and the setting for ForeFlight is Always.

The recommended setting for ForeFlight is “Always” because this allows the app to function as designed if the iPad or iPhone is slept or ForeFlight Mobile is put into the background (eg: so track logs can continue to record). If you choose “While Using the App” there may be a delay updating your position after the app is reopened.

Then open ForeFlight Mobile, tap More, then Settings. Confirm that Enable Ownship is set to: Always.
22. FOREFLIGHT CONNECT

22.2 Sentry

Sentry is a compact, high-performance portable dual-band ADS-B receiver developed by ForeFlight and uAvionix that enables the display of inflight weather and traffic in ForeFlight Mobile.

Sentry also includes an integrated Carbon Monoxide (CO) monitor with in-app alert and loud audio alarm, 12 hours of continuous battery life, built-in WAAS GPS, backup attitude (AHRS), a barometric pressure sensor, onboard memory for Weather Replay™, supports simultaneous connection via Wi-Fi to up to 5 devices, and comes with a RAM® suction-cup mount with quick release.

For additional details, see the Sentry Pilot’s Guide in Documents > ForeFlight.

22.3 Stratus

ForeFlight Mobile supports the Stratus family of ADS-B receivers. These devices provide ForeFlight Mobile with the ability to access ADS-B weather and TIS-B (traffic) data from the network of ADS-B ground stations. Multiple iPads or iPhones running ForeFlight Mobile can simultaneously connect to a Stratus using Wi-Fi. There is no significant practical limit to the number of iOS devices that can be connected to Stratus at once. It is recommended that cellular data be turned OFF when using a Stratus ADS-B receiver.

22.3.1 Stratus Status Information

To see more detailed Stratus status information, tap the Map Settings “gear” button and then tap the Stratus entry, or tap on More > Devices > Stratus > Status. Scroll down to see additional data and Settings.
The following details and Settings are provided on the Status view:

- **Connected** - shows “Yes” if a Stratus is connected via Wi-Fi.
- **Battery** - indicates remaining battery life in percent remaining. Not shown when charging Stratus.
- **Power Source** - indicates whether Stratus is being charged.
- **Serial Number** - Stratus serial number, only needed for technical support concerns.
- **Firmware, Driver, and Wi-Fi versions** - current versions of firmware installed on Stratus.
- **Local/National Update** - date of most recent radar data, local data is generally < 5m old, national is generally < 15m old.
- **Text Update** - last time a new text report was downloaded (ex. METAR, TAF, Winds Aloft).
- **Text Report Count** - number of ADS-B-provided text reports in ForeFlight Mobile.
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- Signal Status - No Towers, Marginal, or Good.
- Stratus Replay Status (Stratus 3/2S/2/1S Only) - indicates if the ADS-B data saved by Stratus, while ForeFlight Mobile was in the background or the iPad was sleeping, has been sent to ForeFlight Mobile. Up to 30 minutes of data is saved.
- Traffic Update (978/UAT) and (1090) - when traffic data was received on either band (1090 requires Stratus 3/2S/2).
- Ownship - if your aircraft is equipped with ADS-B Out, tap this entry to display the information detected by the Stratus about your ADS-B Out transmissions.
- LED Brightness - used to adjust brightness of LEDs on Stratus.
- Turn On When Plugged In - when ON the Stratus will turn on when power is provided over the USB cable and turn OFF when power is removed. When power is removed the Stratus will turn OFF in 2 minutes only if the speed is < 5 knots. If speed is > 5 knots, the Stratus will not turn off until the speed drops below 5 knots, or the power button is pressed.
- Use As GPS - when ON, the Maps and other views will use GPS fix info from Stratus.
- Logging - used only for diagnosing problems, this manages logging of ADS-B data stream received by Stratus. Leave this OFF normally, as it reduces app performance.
- Show ADS-B Towers - show the location on the Map of the ADS-B Towers currently being received.
- Wi-Fi Settings - implements Wi-Fi security for the Stratus local network. Disabling SSID Broadcast makes your network’s name invisible to other iPads/iPhones, preventing them from joining your Stratus network unless they know the name of the network. **WPA2 Security should NOT be enabled.** Changes to the Stratus Wi-Fi Settings require that the device be restarted. **NOTE:** If you forget the Network name or WPA2 passcode you set for your device, perform a factory reset to return it to default conditions: SSID Broadcast - Enabled, WPA Security - OFF, and no passcode. You can perform a factory reset by holding the Stratus power button for 30 seconds.
- Ignore Mfg. AHRS Settings (Stratus 3, 2S, and 2) - when ON, Stratus will automatically reinitialize its AHRS every time it is powered on. **It is recommended that this setting remain OFF** unless the Stratus is providing subpar AHRS readings, which could happen after the Stratus is dropped or is subjected to very large temperature variations. If you are receiving subpar AHRS readings, it is best to reset the AHRS.
readings, turn this setting ON and power cycle the Stratus while keeping the device as stationary as possible for at least 10 seconds after power-up is complete.

- **Save AHRS Calibration (Stratus 3, 2S, and 2)** - when ON, Stratus will save a manual AHRS calibration between power cycles so it does not automatically re-adjust to straight and level every time it is turned back on. This setting is useful for pilots who cannot calibrate the Stratus on the ground due to their aircraft (or Stratus device) not being straight and level, such as with tail dragger aircraft.

**NOTE:** The use of this feature depends on the Stratus not being repositioned after it is calibrated; repositioning the Stratus between flights will cause the saved calibration to become inaccurate, requiring a re-calibration during the next flight.

- **Cabin is pressurized** - (Stratus 3 and 2S) turn ON if flying in a pressurized aircraft.

- **Power-Saving mode** - reduces the Wi-Fi transmit power to increase battery life.

- **Auto Shutoff mode** (Stratus 3 only) - turn ON have the Stratus 3 shut-down automatically if no GPS lock is received within 30 minutes, or if the Stratus 3 is moving at <5 knots for 30 minutes. This setting helps prevent the Stratus 3 battery from draining if it is inadvertently turned on or is left on after a flight.

- **Flight Data Recorder (Stratus 3, 2S, and 2)** - when “Enabled” is ON, Stratus will begin recording a track log as soon as it is turned on and the GPS senses motion (see [Stratus Flight Data Recorder](#) for more information)

- **Track Logs (Stratus 3, 2S, and 2)** - tap to view any track logs recorded by Stratus.

- **Auto-Detect Segments (Stratus 3 and 2S)** - when ON, Stratus will automatically detect trip segments based on your ground speed and create a separate track log for each segment.

- **GPS Satellite Status** - shows location and signal lock for GPS satellites currently visible.

### 22.3.2 Stratus ESG (Stratus 1S/2/2S/3 Only)

Stratus ESG is Appareo’s all-in-one certified ADS-B Out transponder solution. The Stratus 1S, 2, 2S, or 3 can connect to Stratus ESG via USB cable (included in the Stratus ESG installation kit provided by the avionics dealer) to take advantage of the
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Stratus ESG’s certified WAAS GPS receiver and aircraft-mounted ADS-B antenna to boost GPS accuracy and provide improved ADS-B In tower reception. When connected via the USB cable, the Stratus ESG also supplies power to the Stratus 1S, 2, 2S, or 3 to keep the battery charged.

When a Stratus 1S, 2, 2S, or 3 is connected to the Stratus ESG, the Accuracy instrument in ForeFlight’s Instrument Panel will show “Accuracy (ESG)” to indicate that it is receiving GPS position data from the ESG.

22.3.3 Stratus Replay

Stratus Replay saves the last 30 minutes of ADS-B weather information received by the device, including NEXRAD Radar, METARs, TAFs, etc. Stratus Replay automatically sends saved data to ForeFlight when you reopen the app after sleeping the iPad or iPhone, or switching from another app. This allows you to conserve battery life by opening ForeFlight only when needed without fear of missing useful ADS-B weather information.

Stratus Replay requires that the device be updated to Firmware v1.4 or later for a Stratus 2 and v1.0 or later for a 1S/2S.

NOTE: Stratus Replay is not available with the Stratus 1.

You can check the Stratus Replay status by tapping the Map Settings “gear” button and then choosing Stratus, or on More > Devices > Stratus > Status.

22.3.4 Stratus Flight Data Recorder

The Flight Data Recorder feature allows a Stratus 2/2S to save a Track Log file of your flights. The Track Log file includes your position, speed and altitude data throughout each of your flights, and it can be saved regardless of whether you record a Track Log in ForeFlight Mobile.

When activated, the Flight Data Recorder will save up to approximately 20 hours of data, and will automatically delete the oldest track log file from the device to make room to record the new track log file.
22. FOREFLIGHT CONNECT

22.3.5 Flight Data Recorder

Turn on the Flight Data Recorder on the Maps page by tapping the Maps Settings (gear button) then tapping Stratus Status. Alternatively you can tap More > Devices > Stratus > Status and slide the “Enabled” switch to ON.

Track log files will begin recording automatically as soon as the Stratus 2/2S/3 is turned on and the GPS senses motion.

The Track Log file will record until the device is turned off, unless “Auto-Detect Segments” is turned ON, in which case a Track Log will stop recording when Stratus detects a full-stop landing, and another Track Log will be started. Once the device is turned back on, the most recent Track Log file or files will be shown in the “Track Logs” count on the More > Devices > Stratus > Status > Track Logs view.

When connected to a Stratus 2/2S or 3, Track Logs can accessed by tapping More > Devices > Stratus > Status > Track Logs.

To save a Track Log to ForeFlight Mobile, tap the “Cloud” icon next to the Track Log.
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Once that Track Log has been saved to ForeFlight Mobile, you can transfer it to your ForeFlight account where it can be viewed and shared like other Track Logs. Disconnect your iPad from the Stratus 2/2S/3 Wi-Fi network, connect to the Internet, then tap More > Track Logs and tap the “Cloud” icon next to that Track log.

22.3.6 Firmware Update

Appareo, the manufacturer of the Stratus ADS-B receivers, periodically releases updated firmware to activate new capabilities or fix issues.

Before beginning the update process, make sure that your iPad or iPhone AND the Stratus each have enough battery power to run for at least 15 minutes. If you are unsure, plug each device in to an appropriate charger.

Turn the Stratus ON, then open Apple Settings, tap Wi-Fi and connect your iPad or iPhone to the Stratus Wi-Fi network.

Open ForeFlight Mobile, then go to the Devices view and tap the Stratus button. Then tap the “Tap to Update” on the Firmware row: to begin the update. Once the update is complete, tap the “Close” button to return to ForeFlight Mobile.

IMPORTANT: The Stratus will reboot during the firmware update process. When this happens, if there is a known Wi-Fi network in range your iPad or iPhone will reconnect to the other Wi-Fi network. This will cause an error message at the end of the update process since ForeFlight Mobile is no longer connected to the Stratus Wi-Fi network and cannot verify the firmware update.

If this happens, simply quit ForeFlight Mobile, re-connect your iPad or iPhone to the Stratus Wi-Fi network, re-open ForeFlight Mobile and go to the Devices, Stratus page. Verify that the new Stratus Firmware version is listed.

You can avoid this error message either by doing the update in an area with no other Wi-Fi networks, or by, before starting the update, opening Apple Settings, tapping Wi-Fi and “forgetting” any Wi-Fi networks to which your iPad or iPhone may automatically connect.
22.4 Garmin Connext

The Garmin Connext system allows ForeFlight Mobile to receive GPS position data, ADS-B weather and ADS-B traffic from select Garmin avionics by connecting to a Garmin Flight Stream 110, 210, or 510 bluetooth gateway, or to Garmin navigator with built-in Connext Bluetooth. The Flight Stream 210 also includes an AHRS sensor, providing pitch and bank information to the attitude display in ForeFlight Mobile, and the Flight Stream 210 & 510 support two-way flight plan transfer between ForeFlight Mobile and select Garmin navigation displays. ForeFlight Mobile does not currently support receiving XM Weather or music through a Flight Stream.

22.4.1 Pairing with Flight Stream

Once a Garmin avionics dealer has correctly installed a Flight Stream 110, 210, or 510 and connected it to your Garmin avionics, open Apple Settings and tap the Bluetooth tab on the left. If your Flight Stream is already in Bluetooth pairing mode it will appear in the list of available Bluetooth devices and you can tap on the entry to connect. If it doesn’t appear, follow the instructions provided with the Flight Stream to enable Bluetooth pairing mode, then tap the Flight Stream entry to pair it with your device.

22.4.2 Using Connext

After pairing with the Flight Stream, open ForeFlight Mobile and tap on More > Devices. You should see a box for Garmin Connext indicating that the connection is established and listing the data being received through the Flight Stream.

Tapping this box will open the device’s status page,
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providing detailed information about the device and the data being received from it. In addition to the Flight Stream, the status page will also show any Garmin avionics that are connected to the Flight Stream.

“Attitude from access point” indicates whether AHRS data is being provided by the Flight Stream 210 (the “access point” to the chain of Connext devices) or from another device in the chain.

If connected to a GNS or GTN unit with a route loaded, the details of that route will also be displayed. Tap on the route to load it into ForeFlight Mobile’s Route Editor.

**Warning:** DO NOT PRESS the **Reset AHRS** at the bottom of the Settings page unless specifically directed to by the ForeFlight Pilot Support Team or your Garmin Avionics dealer.
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**GPS and ADS-B from Connext**

When GPS data is being sent from the Flight Stream to ForeFlight Mobile, the Accuracy instrument will show “Accuracy (Connext).”

When an ADS-B weather or traffic layer is selected on the Maps view, the quality of the ADS-B signal being received (No Towers, Marginal, Good) is shown in the upper-left corner of the view below the timestamp indicating when the last update was received.

22.4.3 Flight Plan Transfer

The Panel button is shown at the bottom of the FPL view when your device is connected via Bluetooth to a compatible Flight Stream or Connext-equipped device. On an iPad, tap the Panel button at the bottom of the FPL view and tap “Send to Panel”, or tap the Send To button in the bottom-right corner of the Flight Plan Editor and tap the Panel button to send a route to a GNS 430W/530W, GTN 600/700 series GPS navigator, GNX 375 / GNC 355 / GPS 175, or G3X Touch. **NOTE:** Flight Stream 510 only supports route transfer to GTN 600/700 series GPS navigators.

Because Garmin panels require that a runway be specified for most procedures, ForeFlight will prompt you to select a runway before sending to a supported Garmin navigator.

After sending the route a popup will open in ForeFlight confirming that the route has been successfully sent to the panel. Tap “OK” to dismiss the popup.

Different Garmin GPS navigators support different numbers of waypoints per route. If you attempt to send a route with a too many waypoints for the installed Garmin GPS, the transfer will be rejected. A possible solution for this is to go to More > Settings > Route View and change the Airway Decoding setting to “Bends Only”, which will remove any waypoints that do not result in a change in course.
22. FOREFLIGHT CONNECT

ForeFlight does not send altitude or speed changes via flight plan transfer.

Troubleshooting Unable to Send Route

If you are unable to send a route to the Garmin panel or navigator, but are able to receive a route in ForeFlight Mobile from that device, in the panel or navigator check:

- Connext Setup, to confirm “Flight Plan Import” is enabled.
- “Flight Catalog” to confirm that it is not full. If the catalog is full, delete the unneeded flights from the catalog.

Getting a Route from Connext

Tap the “Panel” (+) button at the bottom of the FPL view and tap “Load from Panel” to load a route from your Connext navigator to the ForeFlight Mobile Route Editor.

When “Auto-Receive from Panel” is enabled, changes to your route in the Connext device produce a notification in ForeFlight Mobile prompting you to load the modified route into your Route Editor, with options to Load Route or Ignore. When “Auto-Receive from Panel” is disabled, changes to your route in the Connext device do not produce a notification. This setting is also available in More > Settings > Map View as “Auto-Receive Panel Flight Plans.”
22.4.4 Calibrating Flight Stream 210 AHRS

The FlightStream 210 AHRS can be calibrated by tapping the AHRS Setting button in the attitude display, above the fullscreen button. This will activate Zero Pitch & Bank mode and a blue Save button will appear in the upper left corner of the display. Adjust your aircraft so that it is straight and level, tap the Zero Pitch & Bank button to zero the display, and tap the Save button to save the AHRS calibration.

NOTE: AHRS calibration should only be performed while in level, unaccelerated flight, or while stationary and level on the ground. Calibrating the device while accelerating or decelerating may result in errors in pitch and bank information.
22. FOREFLIGHT CONNECT

22.4.5 Garmin GTX 345

Garmin’s GTX 345 ADS-B Out/In transponder can provide ForeFlight with WAAS GPS position data, ADS-B weather and traffic, pressure altitude, and AHRS information to drive ForeFlight’s attitude indicator and Synthetic Vision. The GTX 345 appears in More > Devices as “Garmin Connext”, although it can connect directly to ForeFlight via Bluetooth and does not require a separate Flight Stream.

Connecting to GTX 345

After your GTX 345 is installed in your aircraft by a certified Garmin avionics dealer, follow the instructions included with it to enable Bluetooth pairing mode. On your mobile device, open Apple Settings > Bluetooth and select the GTX 345 from the list of available devices. The GTX 345 can pair with up to two devices at once.

Using GTX 345

Once you’ve paired with the GTX 345 via Bluetooth, open ForeFlight and tap More > Devices to confirm the connection was recognized by ForeFlight and see what information is being received from the GTX 345. GPS is only shown here when a location fix has been established, so it may take a minute to appear immediately after the GTX 345 is powered on.
22. FOREFLIGHT CONNECT

Tap the box to view the details of the GTX 345 and the data being received from it.

There are two settings that can be adjusted at the top of the GTX 345 status page:

- **Use as Pressure Altitude** - turn this switch ON to show the pressure altitude data from the GTX 345 on the Maps page as Pressure Altitude.
- **Use as Cabin Pressure Altitude** - turn this switch ON to show the pressure altitude data from the GTX345 on the Maps page as Cabin Pressure altitude. Generally this switch should be OFF in a pressurized aircraft.

There are two settings that can be adjusted at the bottom of the GTX 345 status page:

- **Logging** - used only for diagnosing problems, this manages logging of ADS-B data stream received by GTX 345. Leave this OFF normally, as it reduces app performance.
- **Show ADS-B Towers** - show the location on the Map of the ADS-B Towers currently being received.

The GTX 345 ARHS pitch/roll values (used to drive the Synthetic Vision display) must be initially calibrated by your avionics shop at the time of installation.

**GPS and ADS-B from GTX 345**

When GPS data is being sent from the GTX 345 to ForeFlight, the Accuracy instrument will show “Accuracy (Connext).”

When an ADS-B weather or traffic layer is selected on the Maps view, the quality of the ADS-B signal being received (No Towers, Marginal, Good) is shown in the upper-left corner of the view below the timestamp indicating when the last update was received.
22.4.6 Calibrating the GTX 345 AHRS

The GTX 345 AHRS can be calibrated by tapping the AHRS Setting button in the attitude display, above the fullscreen button. This will activate Zero Pitch & Bank mode and a blue Done button will appear in the upper left corner of the display. Adjust your aircraft so that it is straight and level, tap the Zero Pitch & Bank button to zero the display, and tap the Done button to save the AHRS calibration.

NOTE: AHRS calibration should only be performed while in level, unaccelerated flight, or while stationary and level on the ground. Calibrating the device while accelerating or decelerating may result in errors in pitch and bank information.
22. FOREFLIGHT CONNECT

22.4.7 Garmin GDL 39, GDL 50, GDL 51 GDL 52

ForeFlight can connect to Garmin’s GDL 39, GDL 51, GDL 50, and GDL 52 portable (and remote-mount) receivers. All of the receiver include GPS, and their other features are listed below:

<table>
<thead>
<tr>
<th>Receiver</th>
<th>ADS-B weather &amp; traffic</th>
<th>XM weather</th>
<th>AHRS</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDL 39</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDL 39-3D</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>GDL 50</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>GDL 51</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>GDL 52</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

The receiver appears in More > Devices as “Garmin Connext”, although it can connect directly to ForeFlight via Bluetooth and does not require a separate Flight Stream.

Connecting to GDL 39, GDL 50, GDL 51, or GDL 52

After turning on the GDL 39, open Apple Settings > Bluetooth and tap the name to connect to the receiver. ex: “GDL39”:

Using the GDL 39, GDL 50, GDL 51, or GDL 52

Once you’ve paired with the receiver via Bluetooth, open ForeFlight and tap More > Devices to confirm the connection was recognized by ForeFlight and see what information is being received from the receiver.
Tap the box to view the details of the receiver and the data being received from it.

There are three settings that can be adjusted at the top of the receiver status page:

- **Pressurized Cabin** - Turn this switch ON if the aircraft is pressurized and the receiver is INSIDE the pressurized cabin. Turn this switch OFF if the receiver is OUTSIDE the pressurized cabin.
- **Use as Pressure Altitude** - turn this switch ON to show the pressure altitude data from the receiver on the Maps page as Pressure Altitude.
- **Use as Cabin Pressure Altitude** - turn this switch ON to show the pressure altitude data from the receiver on the Maps page as Cabin Pressure Altitude. Generally this switch should be **OFF in a pressurized aircraft**.

There are three settings that can be adjusted at the bottom of the receiver status page:

- **Logging** - used only for diagnosing problems, this manages logging of ADS-B data stream. Leave this OFF normally, as it reduces app performance.
- **Show ADS-B Towers** - show the location on the Map of the ADS-B Towers currently being received.
- **Pressurized Cabin** - enabling this will cause the receiver to stop sending pressure altitude readings to ForeFlight, since those readings become inaccurate when the device is in a pressurized cabin.
22. FOREFLIGHT CONNECT

**IMPORTANT: DO NOT PRESS** the “Reset AHRS” button at the bottom of the Settings page unless specifically directed to by the ForeFlight Pilot Support Team or your Garmin Avionics dealer.

**GPS and ADS-B**

When GPS data is being sent from the receiver to ForeFlight, the Accuracy instrument will show “Accuracy (Connext).”

When an ADS-B weather or traffic layer (or XM weather layer) is selected on the Maps view, the quality of the ADS-B signal being received (No Towers, Marginal, Good) is shown in the upper-left corner of the view below the timestamp indicating when the last update was received.
Calibrating AHRS

The AHRS can be calibrated by tapping the AHRS Setting button in the attitude display, above the fullscreen button. This will activate Zero Pitch & Bank mode and a blue Save button will appear in the upper left corner of the display. Adjust your aircraft so that it is straight and level, tap the Zero Pitch & Bank button to zero the display, and tap the Save button to save the AHRS calibration.

**NOTE:** AHRS calibration should only be performed while in level, unaccelerated flight, or while stationary and level on the ground. Calibrating the device while accelerating or decelerating may result in errors in pitch and bank information.
22.5 XM Weather Data

ForeFlight Mobile can display these weather data items from the Garmin GDL 51, GDL 52, and SiriusXM SXAR1:

- High Resolution Composite (NEXRAD) Radar, including coverage of areas of southern Canada and northern Mexico
- High Resolution Lowest-tilt (NEXRAD) Radar, including coverage of areas of Canada and northern Mexico
- NEXRAD Storm Cell Attributes and track markers.
- Echo Tops, covering CONUS, northern Mexico, and southern Canada.
- Cloud Tops, covering CONUS, northern Mexico, and southern Canada.
- Icing NOWcast, covering CONUS, northern Mexico, and southern Canada.
- Freezing Level, covering CONUS, northern Mexico, and southern Canada.
- Turbulence, covering CONUS, northern Mexico, and southern Canada.
- Surface Analysis, covering almost all of North and Central America (excluding northernmost Canada and Alaska) and as far west as Hawaii.
- Surface Wind - derived from METARs at Airports, shows wind speed and direction at those locations only.
- Surface Wind Analysis - derived from a forecast model, shows wind speed and direction at 10 meters above the surface at tens of thousands of evenly spaced points across the country.
- Surface Visibility - shows near-term forecasts of surface visibility using colors to indicate visibilities ranging from 10 to 0 statute miles.
- Lightning
- Temporary Flight Restrictions (TFRs) on Maps
- Winds Aloft — Graphical
- Temperatures Aloft
- Dewpoint spread
- METARs/TAFs
- AIRMETS/SIGMETS
- PIREPS
- Radar Coverage Map
22. FOREFLIGHT CONNECT

Storm cell attributes show the height of the cell in 100’s of feet. Tap the marker to view details about the speed and direction of travel. Storm cell track markers show the projected direction of travel of the cell, and where it is projected to be in 20, 40, and 60 minutes from the time of the Radar update.

The storm cell track markers, storm cell attributes, and other weather symbols (see below) are all based on the latest Radar frame received, so do not animate if you tap the Radar ‘play’ button.

Tap on other weather symbol, such as Hail, to view additional details.
22. FOREFLIGHT CONNECT

22.5.1 XM Freezing Level

The Freezing Level layer uses colored gradients (and when zoomed-in, altitudes in feet at the color borders) to depict the lowest altitude at which freezing and icing may occur across the continental U.S., southern Canada, and northern Mexico.
22.5.2 XM Surface Visibility

The XM Surface Visibility layer shows a near-term forecast of surface visibility using colors to indicate forecast surface visibilities ranging from 10 to 0 statute miles.
22. FOREFLIGHT CONNECT

22.6 L-3 Lynx

ForeFlight can connect to L-3’s Lynx line of ADS-B transceivers, including the NGT-9000, -2000, and -2500 models to receive ADS-B traffic and weather and GPS position via Wi-Fi in ForeFlight.

22.6.1 Connecting to Lynx

After the Lynx has been installed in your aircraft, open Apple Settings > Wi-Fi and select “LynxWi-Fi” to connect to the Lynx’s Wi-Fi network.

NOTE: ForeFlight can communicate with the Lynx regardless of the Lynx “Wi-Fi Dongle Application” port setting.

22.6.2 Using Lynx

Once you’ve joined the Lynx’s Wi-Fi network, open ForeFlight and tap More > Devices to confirm the connection was recognized by ForeFlight and see what information is being received from the Lynx (see the note above if the Lynx is not appearing on this screen).

Tap the box to view the details of the Lynx and the data being received from it.
22. FOREFLIGHT CONNECT

There are two settings that can be adjusted at the bottom of the Lynx status page:

- **Logging** - used only for diagnosing problems, this manages logging of the ADS-B data stream received by the Lynx. Leave this OFF normally, as it reduces app performance.
- **Show ADS-B Towers** - show the location on the Map of the ADS-B Towers currently being received.

**GPS and ADS-B from Lynx**

When GPS data is being sent from the Lynx to ForeFlight, the Accuracy instrument will show “Accuracy (L3 Lynx).”

**NOTE:** Due to how ADS-B GPS accuracy is calculated and reported by the Lynx, the accuracy shown in ForeFlight may be worse than what it actually is. This is because the Lynx uses a limited number of “buckets” to report GPS accuracy to ForeFlight Mobile:

<table>
<thead>
<tr>
<th>Lynx GPS Accuracy</th>
<th>GPS Accuracy shown in ForeFlight Mobile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between 30m and &gt;10m</td>
<td>30m</td>
</tr>
<tr>
<td>Between 10m and &gt;3m</td>
<td>10m</td>
</tr>
<tr>
<td>3m or better</td>
<td>3m</td>
</tr>
</tbody>
</table>

When an ADS-B weather or traffic layer is selected on the Maps view, the quality of the ADS-B signal being received (No Towers, Marginal, Good) is shown in the upper-left corner of the view below the timestamp indicating when the last update was received.
22.7 Avidyne IFD 550/540/440

ForeFlight can connect to Avidyne’s IFD 550, 540, and 440 panel avionics via Wi-Fi to receive GPS position and flight plans sent to ForeFlight Mobile, and to send flight plans to the IFD 550/540/440. ForeFlight can also receive attitude information from the IFD 550 to power Synthetic Vision. ADS-B Weather and Traffic are supported when the IFD has firmware 10.2.3.1 or later, and an Avidyne-compatible ADS-B receiver is correctly connected to the Avidyne IFD.

22.7.1 Connecting to IFD 550/540/440

After the Avidyne device has been installed in your aircraft and powered on, open Apple Settings > Wi-Fi, select “LIO_Wi-Fi”, and enter the password to connect to the Avidyne’s Wi-Fi network.

If you also have a Sentry ADS-B receiver (or other portable Wi-Fi-enabled ADS-B receiver) you can configure your IFD 550/540/440 into “Remote” Wi-Fi mode so it connects to the receiver’s Wi-Fi network, allowing your iPad to both receive ADS-B weather & traffic data directly from the Sentry, and to exchange flight plans with the IFD.

**NOTE:** ADS-B data is not provided to the IFD by the portable ADS-B receiver.
22. FOREFLIGHT CONNECT

See the detailed instructions in the IFD 550/540/440 manual; but in general the IFD must be placed into Maintenance mode, then changed to the Wi-Fi Configuration page. Use the knobs on the IFD to Enter the Sentry SSID. **IMPORTANT:** The SSID is case sensitive. To minimize the chance of error when entering the SSID, before starting note the exact spelling and capitalization of the SSID in your iPad’s or iPhone’s Apple Settings > Wi-Fi menu.

**DO NOT** enter a PSK. If you have Stratus WPA2 turned ON, you must turn it OFF before completing this setup. Then change the IFD Wi-Fi mode to: Remote.

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![Wi-Fi Configuration](image)

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![Device List](image)

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![Device Table](image)
22. FOREFLIGHT CONNECT

22.7.2 Flight Plan Transfer

Open ForeFlight and tap More > Devices to see the capabilities being provided by the Avidyne. Tap on the Avidyne IFD tile to open the Avidyne’s status page.

If a route is currently loaded in the Avidyne it will appear at the bottom of the status page under Route. Tap on it to load the route into ForeFlight.

You can also load routes from the Maps view: tap the Panel button (+) at the bottom of the FPL view while connected to the Avidyne and tap “Load from Panel” to load the route into ForeFlight, and “Send to Panel” to send a route to the Avidyne. Or tap the “Send to” button and choose “Panel”.

After sending the route from ForeFlight Mobile, on the Avidyne screen you will see a "Route Upload Ready" notification appear in the lower-right. Select the ROUTE page.

On the ROUTE page, search for your route in the list. The route may not be at the top of the list since routes are organized alphabetically by the "From" waypoint:
Select the route then choose the ACTIVATE ROUTE button on the left side of the screen. Confirm the route if you get a popup. You will now see the chosen route is activated on the Avidyne "FPL" page.

**NOTE:** If a route sent from the Avidyne contains waypoints not supported by ForeFlight Mobile they will appear in the app as Lat/Long waypoints:

**GPS from IFD 550/540/440 and AHRS from IFD 550**

When GPS data is being sent from the Avidyne to ForeFlight, the Accuracy instrument will show “Accuracy (Avidyne IFD540/440)”, though some text will be cut out due to its length.

The AHRS data received from the IFD 550 can be used to power Synthetic Vision. The AHRS can only be calibrated within the IFD 550.
22. FOREFLIGHT CONNECT

22.8  uAvionix echoUAT & SkyEcho

ForeFlight can connect to uAvionix’s echoUAT and SkyEcho transceivers via Wi-Fi to receive ADS-B traffic and weather in ForeFlight, and the echoUAT also provides GPS position.

22.8.1  Connecting to echoUAT & SkyEcho

After either device has been installed in your aircraft, open Apple Settings > Wi-Fi and select “Ping-XXX” (where “XXXX” is some sequence of numbers and letters) to connect to the device’s Wi-Fi network.

22.8.2  Using echoUAT & SkyEcho

Once you’ve joined the device’s Wi-Fi network, open ForeFlight and tap More > Devices to confirm the connection was recognized by ForeFlight and see what information is being received from the device (both echoUAT and SkyEcho will appear as “uAvionix” in ForeFlight).
22. FOREFLIGHT CONNECT

Tap the box to view the details of the device and the data being received from it.

There are three settings that can be adjusted at the bottom of the device’s status page:

- **Logging** - used only for diagnosing problems, this manages logging of the ADS-B data stream received by the device. Leave this OFF normally, as it reduces app performance.

- **Show ADS-B Towers** - show the location on the Map of the ADS-B Towers currently being received.

- **Use as GPS** - turn ON to use the device’s internal GPS to provide position data to ForeFlight. Turn this OFF if you’d rather receive GPS data from another connected device or from your iPad/iPhone’s internal GPS.

---

**GPS and ADS-B from echoUAT & SkyEcho**

When GPS data is being sent from the device to ForeFlight, the Accuracy instrument will show “Accuracy (uAvionix).” When an ADS-B layer such as Radar or Traffic is selected on the Maps view, the number of ADS-B towers being received by the device is shown in the upper-left corner of the view below the timestamp indicating when the last update was received.
22.9 Dynon SkyView

ForeFlight has partnered with Dynon Avionics to bring secure Wi-Fi connectivity between ForeFlight Mobile and the Dynon SkyView glass panel avionics system. This connectivity allows flight plans to be transferred between ForeFlight Mobile and the SkyView, and for ForeFlight Mobile to receive GPS and AHRS data from the SkyView.

To connect your ForeFlight Mobile with your Dynon SkyView, you will need:

- A Dynon Wi-Fi adapter for each SkyView screen.
- SkyView version 12.0 or later in each SkyView screen.
- ForeFlight Mobile version 6.7 or later.

22.9.1 Configuring SkyView Wi-Fi

See the SkyView documentation for instructions on installing and configuring the SkyView Wi-Fi adapter and setting the network password.

22.9.2 Connecting ForeFlight and SkyView

With the SkyView system ON, open Apple Settings > Wi-Fi and tap the SkyView-XXXXX Wi-Fi network, then enter the password to connect.

[Image of Wi-Fi settings on an iPad]

**IMPORTANT:** If your iPad has the Cellular Data option it should be switched OFF. iPhones should have **Airplane Mode** switched ON, with **Wi-Fi** then turned back ON.
22. FOREFLIGHT CONNECT

22.9.3 Flight Plan Transfer

Open the Flight Plan Editor, tap the “Send to” button and tap “Panel”, or tap the Panel button (+) at the bottom of the FPL view and tap “Send to Panel.”

After sending the route a popup will open in ForeFlight confirming that the route has been successfully sent to the SkyView. Tap “OK” to dismiss the popup.

A popup will also open on the SkyView indicating that the route has been successfully received.
22. FOREFLIGHT CONNECT

Getting a Route from SkyView

You can see if SkyView has a route available to send to ForeFlight Mobile in More > Devices > SkyView > Route; or on the Maps view, tap the Maps “Settings” button and scroll to the bottom of the menu.

To transfer a route from a SkyView to an iPad, tap the “Panel” button at the bottom of the FPL view and tap “Load from Panel.” You can also load a route shown on the SkyView status page in More > Devices > SkyView by tapping the route.
22. FOREFLIGHT CONNECT

*GPS and ARHS data from SkyView*

When GPS data is being sent from the SkyView to ForeFlight Mobile, the Accuracy instrument will show “Accuracy (SkyView).”

When AHRS data is being sent from SkyView to ForeFlight Mobile, the ARHS source (displayed by tapping the “Gear” button above “AHRS”) will show as SkyView.

ForeFlight Mobile will be receiving the same AHRS data as is displayed on the SkyView screen(s) so no additional AHRS calibration is necessary in ForeFlight Mobile.
22. FOREFLIGHT CONNECT

22.10 FreeFlight ADS-B

ForeFlight can receive ADS-B weather and Traffic data, as well as GPS position data from appropriately-equipped FreeFlight RANGR ADS-B systems.

22.10.1 Connecting ForeFlight and FreeFlight RANGR

After connecting to the FreeFlight RANGR Wi-Fi network using Apple Settings > Wi-Fi, tap More > Devices to confirm the FreeFlight box is displayed.

Tap the FreeFlight box to see detailed information and settings for the FreeFlight RANGR.
22. FOREFLIGHT CONNECT

**GPS and ADS-B data from FreeFlight RANGR**

When GPS data is being provided by the RANGR, the Accuracy instrument will show (FreeFlight).

![Accuracy (FreeFlight)](image)

When an ADS-B layer such as Radar or Traffic is selected on the Maps page, the number of ADS-B towers being received by the FreeFlight RANGR is shown in the upper-left corner of the page below the timestamp indicating when the last update was received.
22. FOREFLIGHT CONNECT

22.11 SiriusXM SXAR1

ForeFlight Mobile supports the SiriusXM SXAR1 portable, battery-powered weather receiver when used with a “Pilot for ForeFlight” SiriusXM weather data subscription. To purchase that subscription from SiriusXM, call SiriusXM Aviation at 1-855-838-8563 or visit www.siriusxm.com/aviation/hardware/foreflight.

22.11.1 Connecting ForeFlight to the SXAR1

The SXAR1 uses Bluetooth to connect to a single iPad or iPhone at a time; simultaneous connections to multiple iPads or iPhones are not currently supported.

To pair your iPad or iPhone with SXAR1 turn the SXAR1 ON and once the lights on top start to illuminate, open Apple Settings and go to the Bluetooth section.
22. FOREFLIGHT CONNECT

Tap the SXM_#### entry to pair with your iPad.

**NOTE:** The letters and numbers after “SXM_” in the list of Bluetooth devices are your RadioID, which may be needed when subscribing, re-activating, or resetting your “Pilot for ForeFlight” SiriusXM weather data subscription.

### 22.11.2 XM Weather Data

Tap More > Devices > SXAR1, or from the Maps page tap the Maps Settings (gear) button and scroll down to SXAR1, to see device status and settings.

There are four settings that can be adjusted at the bottom of the SXAR1 status page:

- **Use as GPS** - turn ON to use the SXAR1’s internal GPS to provide position data to ForeFlight. Turn this OFF if you’d rather receive GPS data from another connected device, such as a Sentry.

- **Dim LEDs** - turn ON to dim the SXAR1’s status lights, which helps preserve battery life and reduces brightness when flying at night.

- **Logging** - used only for diagnosing problems, this manages logging of XM data stream received by SXAR1. Leave this OFF normally, as it reduces app performance.

- **Background Data Connection** - when ON, SXAR1 will continue to send updated weather data to ForeFlight even when it is in the background. We recommend leaving this ON, because turning it OFF can result in the loss of Bluetooth connection to SXAR1 if ForeFlight is kept in the background.
**SiriusXM Satellite Radio**

With a SiriusXM Satellite Radio subscription, an add-on to the “Pilot for ForeFlight” SiriusXM weather data subscription, you can listen to SiriusXM radio while in-flight via a Bluetooth audio device. This can be a single headset with Bluetooth audio, or an intercom with Bluetooth audio interface, or a Bluetooth audio adapter plugged-in to a “music-in” jack in your aircraft’s panel and wired-in to the intercom.

**IMPORTANT:** the SiriusXM satellite radio does NOT play directly through the iPad or iPhone speaker or headphone jack. You MUST connect a Bluetooth audio device per the instructions below.

Playing a satellite radio stream is controlled by the interface in ForeFlight Mobile, but the audio is sent directly from the SXAR1 to the Bluetooth audio device. This means the audio will continue to play if you sleep ForeFlight Mobile.

To add SiriusXM Audio to your existing subscription, call 855-838-8563 or visit www.care.siriusxm.com/login_view.action to upgrade. For more information about the “Pilot for ForeFlight” plan, visit www.siriusxm.com/aviation/hardware/foreflight.

After adding the subscription to your plan, you will see “Audio: Active >” below the ForeFlight subscription in More > Devices > SXAR1.

If “Active” does not show, position the SXAR1 so it has a clear view of the sky, then send a refresh signal to your radio by visiting www.siriusxm.com/refresh.
22. FOREFLIGHT CONNECT

22.11.3 Bluetooth audio

To listen to satellite radio programming you must connect a Bluetooth audio device to the SXAR1. To begin the connection process, tap More > Devices > SXAR1 > Audio, or on the Maps page tap the Maps Settings button, then scroll down to the SXAR1 and tap the “Audio >” line.

To connect to a Bluetooth audio device for the first time, turn it on and make sure it is in pairing mode. If that Bluetooth audio device was previously paired to your iPad or iPhone, you should “forget” that pairing in Apple Settings so that the device will be available to connect to the SXAR1.

NOTE: many Bluetooth audio devices automatically enter pairing mode when first turned-on, as long as no other previously-paired devices are nearby.

Once the Bluetooth audio device is on and in pairing mode, tap “Bluetooth Audio” to initiate the connection from the SXAR1 to the Bluetooth audio device.
22. FOREFLIGHT CONNECT

Tap the name of the device to which you would like the SXAR1 to connect. The “spinner” will appear and when the pairing is complete, the connected device will show in the “My Devices” section and audio should begin playing. To disconnect the device, or to forget it completely (which would require re-pairing) tap the “i” next to the device name, then choose the desired option.
22. FOREFLIGHT CONNECT

22.11.4 SXAR1 Audio Controls

You can tune to a new channel by tapping the Category then Channel, or by typing the Channel number or name (full or partial) in the “Tune or Search” box. A vertical scroll bar shows when there are more Channels or Categories than can be shown, and blue speaker icon shows in the currently-playing Category and Channel.
For additional information about ForeFlight’s support for SiriusXM Satellite Radio and troubleshooting tips, visit SiriusXM SXAR1 Support.
22. FOREFLIGHT CONNECT

22.12 Satcom Direct Router (SDR) or SDR Gateway

All customers can connect to Satcom Direct Router or SDR Gateway to receive in-flight internet data in ForeFlight, but customers with a Performance Plus or Business Performance plan can also receive GPS and indicated altitude, in addition to having more control over the device’s internet settings.

22.12.1 Connecting to Satcom Direct Router or SDR Gateway

To connect to the SDR’s Wi-Fi network, open Apple Settings > Wi-Fi and select “SDR-XXX”, where “XXX” is the router’s serial number.

22.12.2 Using Satcom Direct Router or SDR Gateway

Once you’ve joined the Wi-Fi network, open ForeFlight and tap More > Devices to confirm the connection was recognized by ForeFlight and see what information is being received from the Satcom Direct device.

Tap the box to view details about the data being received from it.
There are settings that can be adjusted at the bottom of the status page:

- **Allow ForeFlight to access the Internet** - turn this OFF to prevent ForeFlight from using internet data from the SDR, reducing inflight bandwidth usage and associated costs. This setting is ON by default.

- **Logging** - used only for diagnosing problems, this manages logging of the data stream received by the SDR. Leave this OFF normally, as it reduces app performance.

- **Use as GPS** - turn ON to use your aircraft’s GPS data routed through the SDR to provide position data to ForeFlight. Turn this OFF if you’d rather receive GPS data from another connected device or from your iPad/iPhone’s internal GPS.

**NOTE**: the SDR supplies GPS lat/long and groundspeed data, but it may not provide GPS altitude or GPS track, depending on the SDR’s firmware.

Tap the “Web UI” line to access the SDR LAN network administrator page on Safari.

**GPS and Pressure Altitude from SDR**

When GPS data is being sent from the SDR to ForeFlight, the Accuracy instrument will show “Accuracy (A429)”. When Pressure Altitude data is being sent from the SDR to ForeFlight, the Pressure Altitude instrument will say “Pressure Altitude (A429)”, and will have a “Indicated” tag underneath, indicating that the value represents actual indicated altitude.
22. FOREFLIGHT CONNECT

22.13 DAC International GDC64

ForeFlight Mobile 11.10 and later support receiving GPS position and ADS-B data from a properly configured GDC64 with firmware version 7.0.A or later.

The GDC64 will appear with 2 “tiles” in the More > Devices view:
22. FOREFLIGHT CONNECT

22.14 Pilatus Honeywell Apex & Aspen Connected Gateway

ForeFlight Mobile 13.1 and later with a Performance Plus or Business Performance subscription can send routes to Pilatus PC-12 and PC-24 aircraft that are equipped with both a Honeywell Apex FMS and an Aspen Connected Gateway (CG100P/GC200P).

To send a route the iPad or iPhone must be connected to the Aspen Connected Gateway’s Wi-Fi network, via the Apple Settings > Wi-Fi.

After connecting the Aspen GC100P/GC200P “tile” will be shown in More > Devices.

After creating a flight on the Flights page (including passengers and fuel load) you can send the route to the Aspen Connected Gateway by tapping the “Send to” button in the upper-right corner of the Flights page, then choosing “Panel”

A route can also be sent from the Maps page to the Aspen Connected Gateway by tapping the “FPL” button to open the Flight Plan Editor, entering a route, then tapping the Panel button ((+)) and choosing “SendTo Panel” to send the route.

**IMPORTANT:** SIDs/STARs and Approach procedures cannot currently be transferred, so ForeFlight Mobile automatically removes those when sending to the panel. A pop-up message is shown in ForeFlight Mobile after the route is sent, to remind the pilot that the SIDs/STARs and Approach procedures must be managed in the FMS. Also, airways are flattened into individual waypoints when sending to the panel.
22. FOREFLIGHT CONNECT

After the route is sent to the Aspen Connected Gateway, it must be loaded into the FMS. First, select the FPLN Source to “Gateway” (1) then select the flight from FPLN List (2).

1. Select FPLN Source to “Gateway”

2. Select the flight from the “FPLN List”.
Clearing routes from the GC100P/GC200P SD Card

The Aspen GC100P/GC200P store transferred routes on an SD card. When the SD card is full, new routes cannot be transferred until the SD card is cleared.

To clear the routes, tap the GC100P/GC200P “tile” on More > Devices, then tap “Delete stored flight plans”. IMPORTANT: Deleting stored flight plans will clear ALL routes that have been sent to the Connected Gateway.
22. FOREFLIGHT CONNECT

22.15 Baron Mobile Link/WXWorx

The Baron Services Mobile Link plugs-in to a WXWorx XM WX receiver, and provides a Wi-Fi connection so that ForeFlight Mobile can access the XM WX data. Please consult the Mobile Link documentation to learn how to setup and connect the device.

The Mobile Link firmware 2.0 or higher allows data access to up to 4 devices at a time. ForeFlight Mobile attempts to get data access whenever it is launched and again any time data is requested by the user. ForeFlight Mobile will release its access when the app is closed via the physical home button.

If a device or app has gained access to the data and does not release it properly, the Mobile Link will automatically release the access for that device after 60 seconds.

The Mobile Link status view in ForeFlight Mobile will state whether data access has been obtained, see the “Status information” section below for more information.

22.15.1 Available Weather

ForeFlight Mobile can display these weather data items from the Baron Mobile Link/WXWorx:

- Radar - for any subscribed region, shown on Maps.
- Satellite - for any subscribed region, shown on Maps
- METARs and METAR-derived data shown on Maps, such as temperature
- TAFs
- Winds Aloft
- TFRs on Maps  **SEE IMPORTANT NOTICE BELOW**
- PIREPs on Maps
- AIRMETs/SIGMETs on Maps
- Lightning on Maps (requires Mobile Link firmware version 2.0 or higher)

Data is accessed just as it is when on the ground using an Internet connection. There is no user-configuration required beyond ensuring the Wi-Fi connection to the Mobile Link is properly established.
TFRs IMPORTANT NOTICE:

While using a Baron Mobile Link XM WX receiver, up-to-date graphical TFR information is ONLY displayed if you select the TFR Map layer.

However if the FAA publishes a TFR without associated graphical shape information it may not be possible for ForeFlight Mobile to show the graphical TFR on the Maps page.

Therefore you should also check the Airports page, under NOTAMs > TFRs for airports along your route, and contact ATC or FSS to confirm that your route does not cross any such TFRs.

TFR data may not be updated or displayed if your iPad is “asleep”, is not connected to the Baron Mobile Link, if the Baron Mobile Link receiver is not receiving data from XM satellites, or if the XM satellite data does not include information about that TFR.

Mobile Link Status Information

To learn the status of the Mobile Link connection, subscription, data availability and more, please use the Devices view as described above. When connected to the Mobile Link Wi-Fi access point, Mobile Link will be an option shown in the Devices view. Tap it to see full status information. This information is useful for troubleshooting if you experience problems with the Baron Mobile Link/WXWorx combination.
22.16 uAvionix SkyEcho 2 FLARM traffic (Europe-only)

ForeFlight Mobile 11.5 and later support displaying FLARM traffic (available in Europe) from the uAvionix SkyEcho 2. Viewing FLARM traffic in ForeFlight Mobile requires an app-specific FLARM decoding license, which can be purchased as an add-on to your ForeFlight subscription plan. You can add the FLARM license for ForeFlight Mobile at www.foreflight.com/buy (enter your email address then proceed to the next page) or sign-in to your account on ForeFlight Web and click “Upgrade or Renew My Subscription.”

NOTE: FLARM decoding licenses cannot be transferred between devices or apps, so you’ll need a ForeFlight-specific license even if you already have a FLARM license for another app or display.

If you connect to a SkyEcho 2 and activate FLARM mode via the SkyEcho 2 Web UI but do not yet have a ForeFlight Mobile FLARM decoding license, you’ll see the “License required...” tile on the More > Devices page. The next time your iPad connects to the Internet after this tile is displayed, your ForeFlight Mobile app will notify the ForeFlight servers and you’ll receive a personalized email with instructions for adding the FLARM decoding license to your ForeFlight subscription.

After you’ve added the FLARM decoding license to your ForeFlight subscription, the next time you open the app while connected to the SkyEcho 2 you’ll see the updated tile. You can tap on the “SkyEcho 2” tile to see details about the SkyEcho 2 device and the data being received.
22.17 FLARM via NMEA (Europe-only)
Beginning with ForeFlight Mobile 11.7, ForeFlight Mobile can display FLARM traffic information delivered via the NMEA protocol. An adapter (typically Wi-Fi) is required to convert NMEA data into a format that can be received by the iPad.

22.18 Other Third-Party Devices (GDL90)
Beginning with ForeFlight Mobile version 10.0, ForeFlight Mobile provides an extension of the industry-standard GDL90 Data Interface Specification for third-party devices to transmit live ADS-B weather and traffic, AHRS, device name, and GPS data to ForeFlight Mobile.

ForeFlight does not test or provide support for devices that use this specification. If you experience problems with a device that uses this specification, please contact the device manufacturer for assistance.

For more information, please see the GDL90 Extended Specification

ForeFlight Mobile can display ADS-B weather data from a number of supported portable and installed ADS-B receivers. See https://foreflight.com/connect/ for full details about the currently supported receivers. Please consult your specific device’s documentation to learn about how to set up and connect the device.

22.19 ADS-B Weather Products
These are the weather products available from ADS-B:

- **Radar** - local and CONUS, shown on Maps.
- **Lightning**
- **Turbulence**
- **Cloud Tops**
- **METARs** and METAR-derived data such as temperature on Maps page.
- **TAFs**
- **Winds Aloft**, at airport locations on Maps page, and Airports page.
- **TFRs** on Maps page  

SEE IMPORTANT NOTICE BELOW
22. FOREFLIGHT CONNECT

- **PIREPs** on Maps page
- **AIRMETs/SIGMETs** (including Graphical AIRMETs) and CWAs on Maps page
- **Special Use Airspace** status - shown on Maps page when viewing airspace details. Hold finger on airspace to view pop-over. Make sure **All** is selected at bottom of pop-over to see airspace details.
- **Outage** messages - messages about outages in ADS-B system can be viewed in More > Devices > status view.

The items listed above are viewed just as they are when on the ground using an Internet connection. There is no user-configuration required beyond ensuring the iPad or iPhone is connected to the ADS-B receiver’s Wi-Fi or Bluetooth connection.
22. FOREFLIGHT CONNECT

22.19.1 ADS-B Information

When an ADS-B receiver is connected and a Map layer such as Radar or Traffic that uses ADS-B is selected, a data quality indicator is shown in the upper-left corner of the Map, underneath the timestamp. If known, the name of the receiver (such as “Stratus”) is shown to the left of the data quality indicator.

**No Data** is shown in White when the ADS-B receiver is receiving data from towers but no ADS-B weather data has yet been received. Typically this will only be shown for a couple of minutes at the beginning of a flight.

**No Towers** is shown in Red when the ADS-B receiver isn’t receiving data from any ground-based towers;

**Marginal** is shown in Orange when the ADS-B receiver is receiving data from a small number of towers;

**Good** is shown in White when data is being received from more towers:
22. FOREFLIGHT CONNECT

22.20 Animated ADS-B Radar

When the Radar layer is selected on the Maps page, the animation play button is displayed in the lower-left corner of the screen. ForeFlight Mobile will animate (loop) up to 5 frames of NEXRAD data. Regional NEXRAD (within ~250 nm of your position) is updated every 5 minutes, while CONUS radar is updated every 15 minutes.

If you tap the play button before 2 or more frames of radar data have been received, you will see a message that the radar cannot be animated until more data is received.

Tap the Maps Settings (gear) button and then select the ADS-B receiver > Status to see how many radar frames have been received, as when other products were updated.
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22.21 ADS-B Tower Location on Map

When Show ADSB Towers is ON in the [ADS-B receiver] > Status settings menu, the location of each ADS-B Tower currently being received is shown on the Map.

The Lat/Long location of each tower is shown under the tower icon, and the type of tower (Low, Medium, or High) is shown next to the tower. This table from the AIM (available in Documents > Drive > FAA) shows the differences between the weather data sent from each type of ADS-B tower.

<table>
<thead>
<tr>
<th>Product</th>
<th>Surface Ranges</th>
<th>Low Altitude Tier</th>
<th>Medium Altitude Tier</th>
<th>High Altitude Tier</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONUS NEXRAD</td>
<td>N/A</td>
<td>500 NM look-ahead range</td>
<td>500 NM look-ahead range</td>
<td>750 NM look-ahead range</td>
</tr>
<tr>
<td>Winds &amp; Temps Airlift</td>
<td>500 NM look-ahead range</td>
<td>500 NM look-ahead range</td>
<td>750 NM look-ahead range</td>
<td>1000 NM look-ahead range</td>
</tr>
<tr>
<td>METAR</td>
<td>100 NM look-ahead range</td>
<td>250 NM look-ahead range</td>
<td>375 NM look-ahead range</td>
<td>Outside of CONUS: 500 NM look-ahead range</td>
</tr>
<tr>
<td>TAF</td>
<td>100 NM look-ahead range</td>
<td>250 NM look-ahead range</td>
<td>375 NM look-ahead range</td>
<td>Outside of CONUS: 500 NM look-ahead range</td>
</tr>
<tr>
<td>AIRMET, SIGMET, PIREP, and SAA</td>
<td>100 NM look-ahead range</td>
<td>250 NM look-ahead range</td>
<td>375 NM look-ahead range</td>
<td>Outside of CONUS: 500 NM look-ahead range</td>
</tr>
<tr>
<td>Regional NEXRAD</td>
<td>150 NM look-ahead range</td>
<td>250 NM look-ahead range</td>
<td>375 NM look-ahead range</td>
<td>500 NM look-ahead range</td>
</tr>
<tr>
<td>NOTAM, FDC, and TTR</td>
<td>100 NM look-ahead range</td>
<td>250 NM look-ahead range</td>
<td>500 NM look-ahead range</td>
<td>1000 NM look-ahead range</td>
</tr>
</tbody>
</table>
22. FOREFLIGHT CONNECT

22.22 ADS-B Traffic

ForeFlight Mobile can display ADS-B TIS-B traffic from a number of supported portable and installed ADS-B receivers. See foreflight.com/connect for full details about the currently supported receivers. Please consult your specific device’s documentation to learn about how to set up and connect the device.

IMPORTANT TRAFFIC NOTICE

TRAFFIC DISPLAY FEATURES MAY NOT SHOW ALL AIRCRAFT IN THE AREA AND ARE NOT TO BE USED AS A PRIMARY MEANS OF AIRCRAFT VISIBILITY, DETECTION OR AVOIDANCE. TRAFFIC DISPLAYED WILL VARY DEPENDING ON ADS-B COVERAGE AREAS AND ON THE TYPE AND VERSION OF ADS-B “IN” AND ADS-B “OUT” EQUIPMENT INSTALLED IN YOUR AIRCRAFT AND OTHER AIRCRAFT.

IF YOUR AIRCRAFT IS NOT EQUIPPED WITH ADS-B “OUT”, YOU WILL NOT RECEIVE A COMPLETE PICTURE OF TRAFFIC.

24.22.1 Traffic Access in ForeFlight Mobile

Some ADS-B receivers like the Sentry, include a dual-band 978 MHz UAT + 1090 MHz receiver. ADS-B traffic may be transmitted over one or both bands. Aircraft operating above 18,000' use the 1090ES band, though these aircraft continue to broadcast on 1090ES when descending below 18,000'.

To display Traffic, tap the Maps drop-down and select the Traffic layer. Use the “Hide Distant Traffic” Setting (later in this section) to hide traffic beyond 15nm or +/- 3,500' from your location.

NOTE: While on the ground if your device is connected to the Internet, traffic data streamed from FlightAware can be shown on the Map when the Traffic layer is selected. See Internet Traffic for more information.

Status Information

To learn the status of the ADS-B receiver connection, data availability and more, use the Devices view as described above. When connected, the ADS-B receiver will be an option shown in the Devices view. Tap it to see full status information including the traffic updates received from ADS-B ground stations and aircraft on 978/UAT and 1090 bands.
### 22.22.2 Traffic Symbols

Moving traffic targets are displayed as “arrowheads” pointing in the direction that the target is traveling. Stationary targets, or ones with no direction or speed information, are shown as diamonds. Airborne traffic targets are shown in blue while surface targets are shown in brown. When your aircraft and a traffic target are moving >40kts a traffic target that is within 2.0 NM horizontally and +/- 1,200’ vertically of your current position (or will be within 45 seconds) the target’s color changes to **yellow**. When a traffic target is within 1.3 NM horizontally and +/- 1,200’ vertically of your current position (or will be within 25 seconds) the target’s color changes to **red**. Red traffic targets that are no longer an immediate hazard remain highlighted for 15 seconds to help locate the target on the map.

<table>
<thead>
<tr>
<th>Moving target (+33 is 3,300’ above)</th>
<th>Stationary target, or unknown direction/speed (-30 is 3,000’ below)</th>
<th>Climbing &gt;500 ft/min (+5 is 500’ above)</th>
<th>Descending &gt;500 ft/min (+16 is 1,600’ above)</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Moving target" /></td>
<td><img src="image2" alt="Stationary target" /></td>
<td><img src="image3" alt="Climbing target" /></td>
<td><img src="image4" alt="Descending target" /></td>
</tr>
<tr>
<td>Within <strong>2.0 NM</strong> and +/- 1,200’, or will be within 45 seconds (+9 is 900’ above)</td>
<td>Within <strong>1.2 NM</strong> and +/- 1,200’, or will be within 25 seconds (+7 is 700’ above)</td>
<td><img src="image5" alt="Ground target" /></td>
<td><img src="image6" alt="Ground target" /></td>
</tr>
<tr>
<td><img src="image7" alt="Ground target" /></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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The relative altitude (in 100’s of feet) between your current altitude and the target’s altitude is shown with a + indicating above and a - indicating below your current altitude. The TrafficTrend™ vector is projected out of the front of the arrowhead to indicate the target’s expected position in the next 60 seconds (longer vector = faster speed).

**IMPORTANT:** Because of the way the ADS-B system (including aircraft ADS-B transmitters & receivers, and ADS-B ground stations) operates, ForeFlight Mobile may at times show relative altitudes of traffic targets based on the pressure altitude detected from your aircraft’s ADS-B transmitter, and the pressure altitude read from a traffic target’s ADS-B data. As a result of the cumulative inaccuracies in pressure altitude systems, you should consider any target shown to be within 500’ vertically as potentially being at the same altitude as your aircraft.

**NOTE:** Some transmitted traffic data can be incomplete at times, so aircraft flight/tail number, vertical speed and TrafficTrend vector may not be available for one or more targets.

Aircraft equipped with ADS-B “Out” transmit additional data such as their tail or flight number, which is shown below the target symbol.

You can tap on any target to display a popup with additional information, which can include target tail or flight number, heading, speed, relative direction and altitude vs, your current position, and whether the information was broadcast via 978 or 1090.

**NOTE:** Garmin ADS-B devices do not specify what frequency a traffic target was broadcast on.

If the traffic target has a three-letter callsign, the popup will also show the phonetic name for that callsign as well as the company name it refers to. Tap anywhere outside the popup to close it.
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22.22.3 Hide Distant Traffic Setting

The Hide Distant Traffic setting, shown when your iPad or iPhone is connected to an ADS-B receiver, is accessed via the “Gear” button on the Maps page or on the More page under Devices > ADS-B receiver > Status.

When switched ON, this hides traffic that is more than 15NM away from your current GPS location and/or more than 3,500’ above or below your current altitude, useful if you are flying in busy airspace or near large airports with lots of commercial traffic. When ON, a “Hiding Distant Traffic” reminder is displayed in the bottom right corner of the Maps page. Traffic targets that are yellow or red will always be displayed even if Hide Distant Traffic is ON.

22.22.4 Traffic in Synthetic Vision

In ForeFlight Mobile 10.2 and later, traffic targets within 11nm of your current position are shown in the Synthetic Vision view. To convey distance, traffic targets closer to your position are shown in a larger size, and traffic targets fade out beyond 11nm distance away from your position.

Traffic in Synthetic Vision
22. FOREFLIGHT CONNECT

22.22.5 Ownship ADS-B Out Information

If your aircraft is equipped with ADS-B Out that is correctly configured and transmitting, tap the Ownship ADS-B Out entry in ADS-B Receiver Status to see the tail-number, altitude and location being broadcast by your ADS-B Out equipment.

If your aircraft is not equipped with ADS-B Out, or the ADS-B Out is improperly configured or is not transmitting, the Ownship ADS-B Out entry shows Not Detected.

22.22.6 Traffic Alerts

If your aircraft and an ADS-B Traffic target are each moving >40 kts, the traffic target will turn yellow if it is within 2.0 NM horizontally and +/- 1,200’ vertically of your current position, or will be within 45 seconds.

When the Traffic Alerts setting is ON in More > Settings > Alerts, the traffic target will turn red and a traffic popup will be displayed if an ADS-B traffic target comes within 1.3 NM horizontally and +/- 1,200’ vertically of your aircraft’s position, or will be within 25 seconds. Red traffic targets remain highlighted as red (or yellow if they move more than 1.3 NM away) for 15 seconds to aid in identifying the target on the map.

The popup includes “clock” direction (relative to your aircraft’s current track) and relative altitude information to help you locate the target more quickly.

If ForeFlight detects that your aircraft is equipped with ADS-B Out, an audio alert will also be issued with the same information as the visual popup. If no ADS-B Out is detected, you will not receive traffic audio alerts.

If your aircraft is not equipped with ADS-B Out but you fly within range of the traffic “puck” around another aircraft that is equipped with ADS-B Out, you may see a false target representing your aircraft, and a visual traffic alert may also be displayed.
NOTE: Traffic alerts are **ADVISORY** in nature and are **NOT** a replacement for “See & Avoid” or ATC traffic advisories.

**IMPORTANT:** Because of the way the ADS-B system (including aircraft ADS-B transmitters & receivers, and ADS-B ground stations) operates, ForeFlight Mobile may at times show relative altitudes of traffic targets based on the pressure altitude detected from your aircraft’s ADS-B transmitter, and the pressure altitude read from a traffic target’s ADS-B data. As a result of the cumulative inaccuracies in pressure altitude systems, you should consider any target shown to be within 500’ vertically as potentially being at the same altitude as your aircraft. Never use ADS-B traffic data from ForeFlight Mobile as the sole means of traffic avoidance; always use “See & Avoid” or direct instructions from ATC.

Like the Runway Proximity Advisor™, the Traffic Alert popup will display on any screen in ForeFlight Mobile. However if ForeFlight Mobile is not displayed on the screen (e.g., if you are viewing another app, or the iPad or iPhone is sleeping) Traffic Alert popups will not be shown.
ALERTS

ForeFlight Mobile triggers alerts to notify pilots of potential hazards and improve situational awareness. Most alerts are available by default to all ForeFlight users, but some require a Pro Plus or Performance tier subscription. This chapter describes the three types of alerts, explains how to set them up, and describes each alert in detail.

23.1 Alert Types

Alerts can convey their messages in three ways to catch a pilot’s attention: using visual text, audio messages, and tactile vibrations.

23.1.1 Visual Alerts

By default, alerts display as a text box at the top of the device screen. You can tap the text box to dismiss it immediately. However, most alert text boxes disappear on their own after a short time.

23.1.2 Audible Alerts

Audible alerts are optional messages that play alongside a visual alert and convey the same information. Once enabled, they play through your device speakers or a paired Bluetooth headset.

23.1.3 Tactile Alerts

If you enable audible alerts, ForeFlight also triggers tactile vibrations in any device with that capability (like most iPhones) as soon as an alert is triggered.

23.2 Setting Up Alerts

Tap More > Settings > Alerts to display the Alerts menu. This menu lets you enable or disable individual alerts and audible alerts, as well as customize how the TFR alert is triggered.
23. ALERTS

23.2.1 Enabling Audible/Tactile Alerts

To enable audible alerts (and tactile vibrations if your device uses them), tap More > Settings > Alerts and enable Speak All Alerts.

NOTE: When setting the volume of audible alerts, it’s helpful to toggle Speak All Alerts on and off repeatedly. This plays audio messages that you can use to fine-tune the volume on your device.

23.2.2 Enabling Headset Alerts

With audible alerts enabled, you can optionally have them play through a Bluetooth headset. To set this up, pair the headset to your device and set the device volume to an appropriate and safe level.

23.2.3 Disabling Individual Alerts

Most alerts are enabled by default. However, you can disable individual alerts on your device by selecting More > Settings > Alerts and disabling the appropriate toggle.

23.2.4 Customizing TFR Alerts

Unlike other alerts, you can customize when TFR Alerts are triggered. This functionality is described in the TFR Alerts description.

23.3 Available Alerts

The following sections describe each alert’s trigger(s), requirements, and default behavior, along with any conditions that change its behavior. Unless specifically noted, each alert is supported under all ForeFlight subscription plans.

23.3.1 500’ AGL Alerts

500’ AGL Alerts are activated when you descend through 500 ft AGL after having been above 1,000 ft AGL.

Requirements

500’ AGL Alerts will only trigger once every 60 seconds and are automatically disabled if your groundspeed is less than 40 knots.
23. ALERTS

23.3.2 Cabin Altitude Alerts

Cabin Altitude Alerts notify you when your aircraft reaches certain cabin pressure altitudes pertinent to supplemental oxygen requirements (12,000 ft and 25,000 ft MSL).

Requirements
For this alert to trigger, your iPad/iPhone must be equipped with a barometric pressure sensor or be connected to an external device that provides that capability (such as a Sentry or Garmin Flight Stream 210).

Default Behavior
This alert triggers when cabin pressure altitude exceeds 12,000 ft MSL, and again when it exceeds 25,000 ft MSL. The alert triggers no more than once every 30 minutes for each cabin pressure altitude.

23.3.3 Transition Altitude Alert

Transition Altitude Alerts trigger when you climb or descend through 18,000 feet MSL in the U.S. or Canada (or local transition altitude in Europe).

Requirements and Behavior
If up-to-date weather data is being received in-flight via ADS-B or XM, the alert also includes the nearest altimeter setting on descent.
23. ALERTS

23.3.4 Runway Proximity Alerts

Runway Proximity Alerts use GPS and geographic runway safety areas to alert pilots as they approach or enter a runway environment.

Requirements

For this alert to function, ForeFlight Mobile must be active on the device screen, the aircraft must be moving at less than 40 knots, and runway data must be available for the airport.

Default Behavior

Runway Proximity Alerts can convey one of four message types depending on your proximity to the runway. The following examples are written using a hypothetical runway 04-22:

- **Approaching runway 22:** Notifies you when you are nearing one end of the runway and expected to enter the runway environment.

- **Entered runway 22, 4,500’ remaining:** Notifies you when you have crossed onto one end of the runway. ForeFlight predicts which end of the runway you will use to take off and provides runway distance remaining rounded to the nearest hundreds of feet.

- **Approaching runway 04-22:** Notifies you when you are nearing the midpoint of a runway and expected to enter the runway environment.

- **Entered runway 04-22:** Notifies you when you have crossed onto the runway near its midpoint. Runway length remaining is omitted because it’s unclear which runway you will use to take off.

**NOTE:** You may receive an alert on takeoff if you cross a different runway before reaching 40 knots during the takeoff roll, or on landing if you cross a different runway while rolling out.

Runway Proximity Alerts are not provided for your landing runway when landing; you have to taxi onto or near a runway to get an alert.
23.3.5 Runway Final Approach Alerts

Runway Final Approach Alerts trigger when you are descending toward a runway.

Requirements

For this alert to trigger, you must be descending toward a runway and your track must be within 15 degrees of the runway heading. The destination airport does not need to be included in your route for the runway final approach alert to play.

Default Behavior

This alert is only activated once every 10 minutes.

23.3.6 Sink Rate Alerts

Sink Rate Alerts trigger when your descent rate exceeds a predetermined limit.

Requirements

To trigger this alert, your groundspeed must be above 40 knots and you must maintain a given sink rate (see below) for at least five seconds. Once triggered, this alert will not trigger again for 30 seconds.

Default Behavior

The descent rate necessary to trigger this alert varies according to your height above the ground. Sink Rate Alerts trigger sooner at lower altitudes.

- Above 2,500 ft AGL (or when AGL is not known), the alert is triggered if your descent rate exceeds 3,500 ft per minute.
- Between 2,500 ft AGL and 500 ft AGL the descent rate required to trigger the alert decreases linearly along with altitude, down to a threshold of 1,500 ft per minute.
- At 500 ft AGL, the alert is triggered if your descent rate exceeds 1,500 ft per minute.
23. ALERTS

23.3.7 Terrain/Obstacle Alerts

Terrain/Obstacle Alerts trigger an app-wide pop-up window when it detects hazardous terrain or obstacles along your flight path. Unlike other alerts, Terrain/Obstacle Alerts are disabled by default.

Requirements

To use Terrain/Obstacle Alerts, you must meet the following requirements:

- You must have a subscription plan other than Basic Plus.
- You must have downloaded obstacle data.
- You must enable them in More > Settings > Alerts.

Default Behavior

ForeFlight monitors the area within 60 seconds and 60 degrees of your flight track. When within two miles of a final approach path, alert sensitivity automatically adjusts to reduce nuisance alerts.

If hazardous terrain or obstacles are detected, a Hazard Alert pop-up window opens over the active screen and displays the following information on a moving map:

- Aircraft location
- Aircraft altitude AGL
- Hazard detection range
- Color-coded terrain elevation
- Nearby obstacles

Tap Fullscreen to switch to the Map view with the Hazard Advisor map layer enabled, or tap Dismiss to close the Hazard Alert window. The window closes automatically 10 seconds after the terrain/obstacle is no longer a threat.
23. ALERTS

23.3.8 Traffic Alerts

Traffic Alerts notify you when ForeFlight detects traffic that may intersect your flight path or will be in close proximity.

Requirements

To receive visual Traffic Alerts:

• Your aircraft must be flying at or above 250 ft AGL.
• ForeFlight must be connected to an external device (such as a Sentry) that provides ADS-B In traffic data.

To receive audible Traffic Alerts:

• You must meet the above requirements.
• Your external device must also be able to receive ADS-B Out data and assign ADS-B ownship to your aircraft. ADS-B Ownship is the process of identifying a traffic target as being your aircraft. For more information, see Ownship ADS-B Out Information.

Default Behavior

When the above requirements are met, this alert triggers when another aircraft passes within 1.2 nm horizontally and +/- 1,200’ vertically of your aircraft’s position (or will do so within 25 seconds).
23. ALERTS

23.3.9 Device Temperature Alerts

If you receive this alert, your iPad or iPhone is in danger of overheating and potentially shutting down during a flight.

Recommended Actions

ForeFlight recommends taking the following steps to cool down your device:

- Position the device so it is out of direct sunlight.
- Lower the screen brightness.
- Remove the device from any case.
- Direct a vent or other cooling airflow onto the device.
- Remove the device from a charging source.
- Consider turning off the device.

CAUTION: This alert is not guaranteed to display in time to prevent overheating and shutdown, as it relies on device temperature data supplied by iOS. Additionally, this alert only displays once per hour even if your device returns to a high temperature after initially cooling down.

23.3.10 Device Disconnect

Device Disconnect alerts are triggered if the Bluetooth or Wi-Fi connection to a portable or panel-mounted device that ForeFlight supports is lost. This allows you to take appropriate action to restore the connection, to switch to a backup device (if available), or to continue the flight knowing that the previously connected device is no longer available.

Requirements

The alert is only triggered if your groundspeed is above 40 knots or if your device does not have a GPS fix.
23.3.11 Flight Plan Auto Update

Flight Plan Auto Update alerts trigger when ForeFlight receives a flight plan from a supported navigator.

Requirements

For this alert to trigger, you must connect ForeFlight to supported installed (or panel) avionics (such as Garmin Connect devices) that can send flight plans.

Default Behavior

Whenever ForeFlight receives and loads a new flight plan from the panel, it displays a “New Flight Plan Loaded From Panel” message.

23.3.12 Connected Portable Device Low Battery

Connected Portable Device Low Battery alerts display a low-battery message when the portable device’s battery level is reduced to 20%.

Requirements

For this alert to trigger, ForeFlight must be connected to a supported portable device such as the Sentry, Stratus, or Garmin GDL 50/51/52.

NOTE: This alert does not trigger when the mobile device running ForeFlight (iPad or iPhone) is running low on battery level.

23.3.13 Destination WX Frequency Alerts

Destination WX Frequency Alerts provide you with your destination airport’s weather frequency (ATIS, AWOS, or ASOS) as you near the airport.

Requirements

For Destination WX Frequency Alerts to trigger, you must have more than one waypoint in your route, the last item in your route must be an airport, and that airport must have a published weather frequency.
23. ALERTS

**Default Behavior**

The Destination WX Frequency Alert occurs at a certain distance from the airport, which is greater at higher altitudes. (At 5,000 feet or below, the alert triggers at 20 nm from the airport.)

This alert does not disappear on its own. It remains on screen until you dismiss it by tapping on it or until it is replaced by another alert.

The alert will not occur more than once every 20 minutes for the same airport. However, if you change the destination airport, the alert can occur again in less time for the new airport.

**23.3.14 TFR Alerts**

TFR Alerts display app-wide if you will pass inside, over, or under a TFR within the next five minutes. This alert pertains specifically to TFRs issued in the United States.

**Requirements**

For this alert to work, you must be flying at or above 500 ft AGL. Also, you must be able to receive inflight TFR data, or you must have downloaded that data recently with the Pack feature (see below).

**Preflight Data Download**

Before your flight, connect to the internet and use the Pack feature to download all relevant TFRs and weather data.

**CAUTION:** The Pack feature does not provide updated TFR Alerts in flight. ForeFlight can only display TFRs issued after you Pack if you are using an ADS-B or XM inflight weather receiver.

**Setting the Altitude Buffer**

To configure the sensitivity of TFR Alerts, tap More > Alerts > Altitude Buffer and set the buffer to 500’, 1000’, 2000’, or 5000’. This determines how far above or below you ForeFlight searches for TFRs.
23. ALERTS

Disabling DC SFRA/FRZ Alerts

If you regularly fly in and out of the Washington, D.C. SFRA, you can disable alerts specific to that TFR by tapping More > Settings > Alerts and toggling off Include DC SFRA/FRZ.

Default Behavior

TFR Alerts display app-wide even if you don’t have the TFRs layer enabled on the Maps View. TFR Alerts are disabled if you are flying below 500 ft AGL. There are five possible TFR alert messages depending on your position relative to the TFR and its active status:

- **Caution: Upcoming TFR Ahead**: Within five minutes, you will pass within 3 nm of a soon-to-be-active TFR.
- **Caution: TFR Ahead**: Within five minutes, you will pass within 3 nm of an active TFR.
- **Caution: Inside TFR**: You have entered the lateral and vertical boundaries of an active TFR.
- **Caution: TFR Below**: You are above an active TFR by a number of feet set by the Altitude Buffer (see below).
- **Caution: TFR Above**: You are below an active TFR by a number of feet set by the Altitude Buffer.

**CAUTION**: TFR Alerts are provided as a supplementary tool for increasing situational awareness and should not replace conventional tools and methods for avoiding TFRs.

Failure to use the Pack feature to download relevant weather and TFR data before a flight (see above) can impede ForeFlight’s ability to display accurate TFR Alerts.

The Pack feature downloads a snapshot of the airspace taken at that specific time. You will only receive alerts for TFRs issued after you Pack if you are using an ADS-B or XM inflight weather receiver.
JetFuelX is a feature in ForeFlight that helps operators of turbine aircraft view and compare contract Jet A fuel prices at airports by FBO. Fuel card information is uploaded into a “wallet” and linked to aircraft on the account. JetFuelX is available to Performance Plus and Business Performance subscribers.

Performance-tier ForeFlight subscribers can link contract Jet-A fuel cards and sign up for new accounts with participating fuel vendors from ForeFlight Web, linking them to the user’s ForeFlight account. ForeFlight Mobile then displays contract Jet-A fuel prices on its Maps, Airports, Plates, and Flights views and lets users request fuel releases from within its Flights view. ForeFlight Web also displays contract Jet-A fuel prices in its My Flights and Maps views.
24. JETFUELX

24.1 Supported Fuel Vendors

To see the list of participating vendors, log into plan.foreflight.com, select JetFuelX from the sidebar on the left side of the page, and scroll to the bottom of the page to the Integrated Fuel Vendors list. The fuel vendor icons are clickable links to each vendor’s website. This is useful when applying for a contract fuel account.

 participates in the Contract Fuel program.

24.2 Fuel Card Setup and Management

Contract fuel accounts are managed on ForeFlight Web’s JetFuelX page. Each vendor sends fuel price data directly to the user’s ForeFlight account. Fuel cards can be added, edited, and removed. Aircraft profiles can be linked to fuel cards. Status indicators on each fuel card show if an account has current or outdated prices or cannot connect to the fuel vendor, indicating which cards require attention. A vendor’s CSV price files can also be manually imported.
24. JETFUELX

24.2.1 Applying for Contract Fuel Accounts

Before using JetFuelX (including adding fuel cards), users must have already signed up with one or more participating contract fuel providers. The application process varies by vendor and is outside the scope of ForeFlight. However, users can access participating fuel vendors’ websites from within ForeFlight Web. To do so, follow these steps:

1. Log into plan.foreflight.com and select JetFuelX from the sidebar on the left side of the page.
2. Scroll down to the Integrated Fuel Vendors list.
3. Click one of the vendor icons to navigate to their website.
4. Complete the vendor’s application process.
24. JETFUELX

24.2.2 Adding Fuel Cards

The process to add fuel cards is similar for all users, but there is one main difference depending on the type of ForeFlight account:

- Individual account holders can assign fuel cards to any aircraft profile.
- Business account holders can assign fuel cards only to aircraft profiles set up as organization aircraft and published by their organization.

To add a fuel card, follow these steps:

1. Log into plan.foreflight.com and select JETFUELX from the sidebar on the left side of the page.
2. On the JetFuelX page, click Add Card to open the Adding Fuel Card window.
3. In the Fuel Vendor field, select a vendor.
4. In the Card/Account Number field, enter a card or account number if one is listed in your contract fuel account.
5. In the Card/Account Name field, enter the name on your contract fuel account.
6. In the Description field, enter any other useful info about the card.
7. In the Aircraft field, select one or more aircraft profiles.
8. When finished, click Add.

After adding a fuel card, it may take up to a week for some vendors to begin sending fuel price data. The following section describes what happens in the meantime, including ForeFlight's message to the vendor and the steps the user must take based on how the vendor decides to send its price data.
24. JETFUELX

24.2.3 Automatic Price Updates

Adding a contract fuel card triggers an automated email to the fuel vendor requesting that they provide regularly scheduled fuel price data to the user’s ForeFlight account. This email includes all of the information the vendor needs to send price updates to that account.

Example of ForeFlight’s Email to Fuel Vendors

Within one week, the vendor should start sending contract fuel prices to the user’s ForeFlight account, and the user’s fuel card should display a status message. If prices update successfully, this message will be green and include the date of the most recent update.
24. JETFUELX

24.2.4 Manual Price Updates

A red status message displays on the fuel card if a technical issue prevents a vendor’s automatic updates. In that case, the user may update prices by auto-forwarding the vendor’s fuel price emails or manually importing the vendor’s CSV file into ForeFlight Web. Both of these methods are described below.

Price Updating by Forwarding Emails

To set up auto-forwarding, follow these steps:

1. Log into plan.foreflight.com and select JetFuelX from the sidebar on the left side of the page.

2. On the JetFuelX page, at the bottom-right corner of the fuel card, click Import Prices.

3. At the bottom right corner of the Import Prices page, Copy the email address ending in @fuel.jetfuelx.com. This is the unique JetFuelX import email address to be used to forward emails from the contract fuel provider.

4. Locate the vendor’s email containing the CSV file. This email will most likely be sent to the address listed on your contract fuel membership account. Forward the email to the @fuel.jetfuelx.com account you copied in the previous step.

5. Set up auto-forwarding of all future emails from the email address the vendor used above to your @fuel.jetfuelx.com email address using the process dictated by your email provider.

NOTE: @fuel.jetfuelx.com addresses are receive-only and cannot respond to any messages. If an email provider requires a confirmation reply to its request for auto-forwarding, it will be necessary instead to manually import CSV files. This is described below.
24. JETFUELX

Price Updating by Manually Importing CSV Files

Users can manually import price updates to a JetFuelX account using the fuel vendor’s CSV file by following these steps:

1. Locate the vendor’s CSV file (either on the vendor’s website or in an email from the vendor). Download the CSV file to your computer.

2. Log into plan.foreflight.com and select JetFuelX from the sidebar on the left side of the page.

3. On the JetFuelX page, at the bottom right corner of the fuel card, click Import Prices.

4. At the top of the Import Prices page, drag and drop the CSV file from your computer to the gray box, or click Select it from your files to import and use the next window to locate and import the CSV file.

![Import Contract Fuel Prices Webpage](image-url)
24. JETFUELX

24.2.5 Fuel Card Status Messages

A color-coded message is displayed on each fuel card, indicating the status of the vendor’s prices or the state of the connection to the vendor. These messages are described below:

- **Waiting on Prices**: This message displays after a fuel card is first added. It indicates that ForeFlight is waiting on the first price data import. Allow vendors up to one week to begin sending prices. The status will change after the vendor’s prices are imported into the user’s ForeFlight account.

![Arrow Energy Status Message](image)

- **Prices Updated**: This message displays after a user’s account has received the vendor’s latest fuel prices. Look below the message on the fuel card to see the total number of price points available from this vendor and the number of airports at which the vendor displays contract fuel prices. Also, remember to check the date of the most recent import. Prices more than a few days old may change by the time of your next flight.

![EVO Jet Status Message](image)
24. JETFUELX

- **Your Prices are Out of Date**: This message displays when contract fuel price data from this vendor is more than 14 days old. If that happens, ForeFlight also emails an automated notification to the user’s ForeFlight subscription address. After seeing this status message, contact support to determine why prices are not being updated.

- **Problem Connecting to Fuel Provider**: This message displays when an issue prevents the vendor’s contract fuel price data from importing to ForeFlight. If this message is displayed, check to see if the credentials entered for your fuel card are correct and match your contract fuel membership credentials. For example, CAA passwords are case-sensitive.
24. JETFUELX

24.2.6 Editing Fuel Cards

To edit the account information for a fuel card, follow these steps:

1. Log into plan.foreflight.com and select JetFuelX from the sidebar on the left side of the page.
2. On the JetFuelX page, click Edit at the bottom-right corner of the fuel card.
3. In the Fuel Card Details window, edit the account information as necessary. Editable values are indicated by blue font.
4. When finished, click Update.
24. JETFUELX

24.2.7 Removing Fuel Cards

To remove a fuel card, follow these steps. This will delete existing contract fuel prices from ForeFlight and notify the vendor to stop sending prices to the associated ForeFlight account:

1. Log into plan.foreflight.com and select JetFuelX from the sidebar on the left side of the page.
2. On the JetFuelX page, click Edit at the bottom-right corner of the fuel card.
3. In the Fuel Card Details window, click Remove.
4. In the Remove Fuel Card window, click Remove to confirm.
24. JETFUELX

24.3 Contract Fuel Prices at Each Airport

After a fuel card has been added, and its status message shows Prices Updated in ForeFlight Web, users can find their supported contract fuel prices from within several places in ForeFlight Mobile: the Maps, Airports, Plates, and Flights views.

Each of the above locations displays contract fuel price information in two views. These are described below.

24.3.1 The FBO List View

The FBO List view lists each FBO located at that airport. If one or more contract fuel vendors are associated with the FBO, a white “JFX” label indicates their lowest contract fuel price.

Tapping one of the listed FBOs opens its FBO Details view, displaying each contract fuel vendor associated with that FBO. Note that some vendors offer a breakdown of price tiers.
24. JETFUELX

24.3.2 FBO Details View

The FBO Details view provides information about the selected FBO. Tapping the Info tab provides a breakdown of its associated contract fuel vendors and their prices. The sections below describe all of the functionality in this view.

JetFuelX Section

The JetFuelX section includes two selectable rows that affect the fuel vendors and price points that display in the rest of the view.

NOTE: The Aircraft and Fuel (Gallons) fields described below make the information on the FBO Details view more accurate for planning purposes. Interacting with these fields does not initiate a fuel order or a request for fuel release.

- Tap the Aircraft row to select the profile for the aircraft to be used in the flight. This will cause the FBO Details view to display only those fuel vendors (and their prices) that apply to fuel cards tied to that aircraft.
- Tap the Fuel (Gallons) row and enter the amount of fuel that will be ordered at the FBO. The value entered changes which JetFuelX price tier is highlighted for each fuel vendor.
### JetFuelX (Jet-A, Jet-A+) Section

The JetFuelX (Jet-A and Jet-A+) section displays contract fuel prices offered by each vendor associated with the FBO. A contract fuel vendor's prices are only displayed if the user’s aircraft profile is tied to that vendor's fuel card. This section includes the following functionality:

- **Vendor Price Tiers**: Some vendors offer several price tiers. Whichever price tier is highlighted in bold font is the price per gallon based on the amount entered in the Fuel (Gallons) field above.

- **Vendor Notes**: Tap Notes next to any fuel vendor to view additional information that the fuel vendor provided regarding purchasing contract fuel at that FBO. Examples include additional fees for handling, hookup, and infrastructure.

#### FBO Details View

<table>
<thead>
<tr>
<th>Aircraft</th>
<th>N12345</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel (Gallons)</td>
<td>150</td>
</tr>
<tr>
<td>JETFUELX (JET-A)</td>
<td></td>
</tr>
<tr>
<td>1-300 gal</td>
<td>$7.03/gal</td>
</tr>
<tr>
<td>301-1,200 gal</td>
<td>$6.87/gal</td>
</tr>
<tr>
<td>1,201-6,111 gal</td>
<td>$6.63/gal</td>
</tr>
<tr>
<td>Notes</td>
<td>Last updated 5 days ago</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RETAIL PRICES (USD)</th>
<th>SELF</th>
<th>FULL</th>
</tr>
</thead>
<tbody>
<tr>
<td>100LL</td>
<td>None</td>
<td>$7.30</td>
</tr>
</tbody>
</table>

Retail prices in gallons. Last updated 5 days ago.
24.4 Locating Contract Fuel Vendors in ForeFlight

Once a fuel card has been added, and it displays a status message of Prices Updated in ForeFlight Web, users can find their supported contract fuel vendors from within several places in ForeFlight Mobile: the Maps, Airports, Plates, and Flights views. Further detail is provided in the sections below.

24.4.1 Vendors on the Maps View

On the Map view, display the Fuel: Jet A map layer to find contract fuel. If a standard Jet-A fuel price marker has a white “JFX” label, there is at least one FBO associated with that airport that accepts one or more contract fuel cards.

To see more information about the FBOs located at a given airport, follow these steps:

1. On the Maps view, with the Fuel: Jet A map layer displayed, tap a price marker with the “JFX” label.
2. The Maps sidebar opens on the right side of the device screen and automatically displays the FBO List view, including a list of fuel prices. If the airport details view is displayed instead, tap FBOs to open the FBO List view.

![](image)

Tap a JFX Label to See Contract Fuel Vendors
24.4.2 Vendors on the Airports View

On the Airports view, find out if an airport is associated with supported contract fuel vendors by following these steps:

1. On the Airports view, display the desired airport.

2. In the top-right corner of the airport summary pane, tap FBOs to open the FBO List view. Any contract fuel vendors will be displayed, and their contract fuel prices will have a white “JFX” label.

Contract Fuel Vendors on the Airports View Under FBOs
24. JETFUELX

24.4.3 Vendors on the Plates View

On the Plates view, find out if an airport is associated with supported contract fuel vendors by following these steps:

1. Open an airport diagram on the Plates view.
2. At the top of the Plates menu, tap **FBO** to show any FBOs located at that airport.
3. Tap an FBO label to open the **FBO Details view** by default, displaying supported contract fuel vendors and their prices.
24.4.4 Vendors on the Flights View

The Flights view can be used to find out if a departure, destination, or alternate airport along a route is associated with supported contract fuel vendors. To do so, follow these steps:

1. On the Flights view, open a new or existing flight plan.
2. In the Destination section, enter an airport identifier.
3. Tap Info next to the Destination airport to open the airport details view.
4. Tap FBOs to open the FBO List view. Contract fuel vendors will be displayed, and their contract fuel prices will have a white “JFX” label.

24.5 Fuel Release Requests

Requests for fuel releases are made on the Flights view. This functionality is described in Fuel Orders.
ANNOTATIONS

ForeFlight annotations allow you to add your own full-color annotations to approach plates, SIDs, STARs, airport diagrams and documents. This can be useful for highlighting important elements such as crossing altitudes or taxi instructions, or adding notes to your PDF documents.

NOTE: Document annotations are not currently supported on ForeFlight Web.

25.1 About the Design

Annotations are available in all subscriptions. If you have a ForeFlight Pro Plus, Performance Plus, Business Pro, or Business Performance subscription, annotations you make on an approach plate are displayed when you show the annotated plate on the map.

Annotations you add to a Plate, SID, STAR or Airport Diagram are saved at the data cycle change-over, unless the SID, STAR or Plate name changes in the new data cycle (e.g., if the TEXXN5 STAR becomes TEXXN6, or RWY03 ILS becomes RWY04 ILS due to updated magnetic variation).

Annotations you add to a PDF Document are synchronized between all signed-in devices, and are saved if the document is updated provided the document title stays the same during the update.
25. ANNOTATIONS

25.2 Annotation Types

There are 8 kinds of annotations available on the iPad:

<table>
<thead>
<tr>
<th>Drawing</th>
<th>Text Box</th>
<th>Text box</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rectangle</td>
<td>Ellipse</td>
<td></td>
</tr>
<tr>
<td>Line</td>
<td>Polygon</td>
<td></td>
</tr>
<tr>
<td>Polyline</td>
<td>Sticky-note</td>
<td></td>
</tr>
</tbody>
</table>

25.2.1 iPhone Annotations

All annotations made on an iPad are visible on an iPhone. However there are only 3 kinds of annotations available to be created on the iPhone:

<table>
<thead>
<tr>
<th>Drawing</th>
<th>Text Box</th>
<th>Text box</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rectangle</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

25.3 Adding and Editing Annotations

When you open a plate or PDF Document, tap the Annotation button in the menu at the top of the page to display the annotation toolbar:

25.3.1 iPad

Or simply touch-hold on the plate or PDF Document until the magnifying glass appears, then release your finger to display the popup Annotation menu:

Tap the button to choose the type of annotation you want to add (Text, Sticky note, or Ink drawing), then adjust the formatting and color of the annotation (if needed) by tapping the colored Annotation setting button (the colored dot) at the top of the page.

25.3.2 iPhone

The iPhone allows you create freehand drawings, rectangles, and text-box annotations, but you can view all annotations created on an iPad.

You can reposition an annotation by touch-dragging inside of the selection box, and you can resize the annotation by touch-dragging one of the blue “handles” around the annotation.

Choosing Annotation Color

Tap the Color drop-down in the top menu bar to display the line Color, Opacity, and Thickness picker. You can choose from 8 presets: six with transparent “fill” colors (with the red / ) and two with white fill.

Or tap the Color button to display the color picker. Change between the 5 color selection pages by swiping from left to right. When using the color “circle”, touch in the circle to choose the color you want, then slide the horizontal slider below the circle to adjust the brightness of the color.
25. ANNOTATIONS

**Fill Color: Transparent or “No Fill”**

To choose a transparent or “no fill” color, select the Fill Color box with the red diagonal line.

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**Drawing/Ink**

The freehand Drawing/Ink tool allows you to choose the line Color, Opacity and Thickness. To edit a previously drawn line, tap it, then choose the “Inspector” menu.
25. ANNOTATIONS

**Text Box**

The Text Box tool lets you pick the Text Color, the Text Box fill Color, the Opacity, the Font (Font style in a sub-menu), Font Size, text alignment, and whether a Callout line + arrow are automatically attached to the text box.

To create a text box, select the Text Box tool, tap on the Plate or Document where you want the text to appear, then type the desired text. When typing into a text box, several formatting options are available at the top of the on-screen keyboard:

![Typing Interface](image)

To edit a previously drawn text box, tap it, then choose the “Inspector” menu, then tap the attribute you want to change.
25. ANNOTATIONS

If converting the Text Box to include a Callout line + arrow, tap “Callout” in the Convert to line, then choose the Line End type.

You can reposition the callout line by touch-dragging on the green “corner” points.

**Rectangle**

The Rectangle tool allows you to choose the line and Fill Color, rectangle Opacity and line Thickness. To draw a rectangle, touch-hold then drag your finger to make the rectangle. Lift your finger to complete the drawing. To edit a previously drawn rectangle, tap it, then choose the “Inspector” menu.

**Ellipse (Circle)**

The Ellipse tool allows you to choose the line and Fill Color, ellipse Opacity and line Thickness. To draw an ellipse, touch-hold then drag your finger to make the ellipse. Lift your finger to complete the drawing. To edit a previously drawn ellipse, tap it, then choose the “Inspector” menu.
25. ANNOTATIONS

**Line**

The Line tool allows you to choose the line Color, Opacity, Thickness as well as start and end-point type (e.g., arrow, dot, diamond, etc...). To draw a line, touch-hold then drag your finger to make the line. Lift your finger to complete the drawing. To edit a previously drawn line, tap it, then choose the "Inspector" menu.

**Polygon**

The Polygon tool lets you choose the line and Fill Color, polygon Opacity and line Thickness. To draw a polygon, tap your finger to each desired “corner” of the polygon. Each additional tap will extend a line segment from the previous corner to the new tap. When you tap “Done” in the menu bar, a final line segment will automatically be added to “close” the polygon.

To edit a previously drawn polygon, tap it, then choose the “Inspector” menu.
25. ANNOTATIONS

You can edit the corners of the polygon by touch-dragging the green “corner” point handle to the desired corner position.

**Polyline**

The Polyline tool is similar to the Polygon tool, except that the shape is not automatically “closed” when you tap “Done”, and like the Line tool you can choose the start and end-point types (e.g., arrow, dot, diamond, etc...).

To edit a previously drawn polyline, tap it, then choose the “Inspector” menu.

**Sticky-note**

Tap the note icon, then tap the “Edit” button to choose the note background color and icon type. Tap anywhere not on the Sticky-note to close the Edit menu.

**Undo/Redo**

While adding annotations to a Plate or Document, tap the Undo (left) arrow button to remove recent annotation elements, and tap the Redo (right) arrow button to restore removed annotation elements.
25. ANNOTATIONS

25.4 Selecting Multiple Annotations

Tap the Selection button then touch-drag across multiple annotations to select several at once, then tap Group to group the items together, Copy to copy all items, or the Trash can to delete the selected annotations.

25.5 Copying and Pasting an Annotation

Tap a previously added annotation to select the annotation and display the edit popup menu, then tap the Copy button.

Paste the copied annotation in a different location or onto a different page (or document) by touch-holding on the Plate or Document until the magnifying glass appears. Lift your finger, then tap the Paste button in the popup Annotation menu.

25.6 Deleting Annotations

Tap the annotation to select it, then tap the Trash-can button in the edit popup menu.

To remove all annotations from a page, tap the Annotation button, then tap Clear.
SUPPLEMENTAL GUIDES

Supplemental guides for various ForeFlight features are available in-app by selecting Documents > ForeFlight.

Checklist Guide

ForeFlight Checklist lets you complete a checklist with a series of taps, and also includes easy access to Abnormal and Emergency checklists. The app includes checklist templates for various fixed-wing and select rotorcraft models, all derived from pilot operating handbooks.

For complete details, refer to the ForeFlight Checklist Guide available in-app by selecting Documents > ForeFlight or online at www.foreflight.com/checklist-guide.
Logbook Guide

Logbook lets you track your hours, currency, ratings, endorsements, medical certificates, and more across all your devices. It is included in the Basic Plus, Pro Plus, and Performance Plus subscription plans. For complete details, see the ForeFlight Logbook Guide in Documents > ForeFlight or at www.foreflight.com/logbook-guide.

Logbook is part of the ForeFlight Cloud, allowing you to make new entries and track your currency from any device signed into your account.
SUPPLEMENTAL GUIDES

Weight & Balance Guide

Weight & Balance is a dedicated view for determining if your aircraft is loaded within limits. In addition to the dedicated Weight & Balance view, Integrated Weight & Balance is available for all Performance subscribers beginning with ForeFlight Mobile version 14.2. Integrated Weight & Balance allows users to view Weight & Balance information on the Flights view.

Once your aircraft’s Weight & Balance profile is set up, you can quickly create a Loading Summary for each flight, and you can share the profile and a PDF copy of the Loading Summary via email.

Weight & Balance profiles are automatically synced between your devices when Synchronize User Data is enabled in **More > Settings**.


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![Weight & Balance](image.png)

**Weight & Balance**
Passenger Guide

ForeFlight Passenger is a free companion app to ForeFlight Mobile that helps answer your passengers’ age old question, “Are we there yet?”. The Passenger app is downloaded separately from the Apple App Store.

Passenger mode is available in ForeFlight Mobile version 11.2 and later. To activate Passenger mode, first make sure that your iPad’s or iPhone’s Wi-Fi is ON, and that Wi-Fi is ON in the device(s) being used for Passenger. **NOTE:** Your device does not need to be connected to the same Wi-Fi network as the Passenger device(s). And the link from ForeFlight Mobile to Passenger will work even if neither device is connected to a specific Wi-Fi network, as long as Wi-Fi is ON in each device. For more information, refer to the Passenger Guide located in ForeFlight Mobile > Documents > ForeFlight.
Filing Guide

ForeFlight Mobile can be used to file most VFR, IFR, DVFR, and composite flight plans. For complete details, refer to the ForeFlight Filing Guide available in-app by selecting Documents > ForeFlight or online at www.foreflight.com/filing-guide.
<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Change Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.9</td>
<td>October 2022</td>
<td>• Added Operational Note Flags.</td>
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<tr>
<td></td>
<td></td>
<td>• Internet, ADS-B, and XM-based radar now selectable as individual map layers.</td>
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<td></td>
<td></td>
<td>• Added support for UL91/96 fuel.</td>
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<tr>
<td></td>
<td></td>
<td>• Sign-in user interface changed.</td>
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<td></td>
<td></td>
<td>• Added JetFuelX (new Chapter 24).</td>
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<tr>
<td>14.8</td>
<td>September 2022</td>
<td>• Runway Analysis Summary Documented added for single-engine aircraft.</td>
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<td></td>
<td></td>
<td>• Takeoff &amp; Landing Performance Summary Document added.</td>
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<td></td>
<td></td>
<td>• Mogas fuel included in FBO view (if available).</td>
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<td></td>
<td></td>
<td>• Added ability to search recent/favorite routes.</td>
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<tr>
<td></td>
<td></td>
<td>• Updated the Flights chapter.</td>
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<tr>
<td></td>
<td></td>
<td>• Added Runway Analysis.</td>
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<tr>
<td></td>
<td></td>
<td>• Added Takeoff &amp; Landing Performance.</td>
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<tr>
<td>14.7</td>
<td>August 2022</td>
<td>• <strong>ForeFlight version 14.7 requires iOS 15.0 or later.</strong></td>
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<tr>
<td>14.6</td>
<td>July 2022</td>
<td>• Reorganization of chapters.</td>
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<tr>
<td></td>
<td></td>
<td>• New Download setup User Interface.</td>
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<td></td>
<td></td>
<td>• Update to Aircraft and Maps chapters.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Updates Content Pack content.</td>
</tr>
<tr>
<td>14.5</td>
<td>June 2022</td>
<td>• Updates to the Downloads view.</td>
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<tr>
<td></td>
<td></td>
<td>• Added Bearing and Track Instrument setting.</td>
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<tr>
<td></td>
<td></td>
<td>• Added Content Pack subscriptions.</td>
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<tr>
<td></td>
<td></td>
<td>• Added user waypoint elevation support.</td>
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<tr>
<td></td>
<td></td>
<td>• Updates to the FBO view.</td>
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<tr>
<td>14.4</td>
<td>May 2022</td>
<td>• Profile View displays en route altitude changes.</td>
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<tr>
<td></td>
<td></td>
<td>• Global graphical NOTAM support added.</td>
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<tr>
<td></td>
<td></td>
<td>• Metric unit settings added.</td>
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<tr>
<td></td>
<td></td>
<td>• Distance rings add kilometer support.</td>
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<tr>
<td></td>
<td></td>
<td>• Unleaded 94 octane fuel (UL94) included in FBO view (if available).</td>
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<tr>
<td>14.3</td>
<td>April 2022</td>
<td>• Add a delay or stay to your route using the Flight Plan Editor (Performance Plus accounts only).</td>
</tr>
</tbody>
</table>
| 14.2    | March 2022 | • Enhanced Weight & Balance is added via ForeFlight Labs.  
• Hazard Advisor adds preflight terrain analysis. |
| 14.0    | January 2022 | • Individual navaid, waypoint, and airway filters added to Aeronautical Map Quick Filters.  
• Takeoff and alternate minimums document opens to the correct page for the airport.  
• Custom Content GeoTiff support added for MFB customers only. |
| 13.10   | November 2021 | • Airport markers in 3D Preview and 3D Review.                                                                                               |
| 13.9    | October 2021 | • Direction-specific MEA, MOCA, and MAA altitudes, bearing, and other available details for airways on the Aeronautical Map.          |
| 13.8    | October 2021 | • Profile View on the iPhone.  
• Graphical Track Log review user interface updates.  
• Support for Honeywell Apex FMS and Aspen Connected Gateway GPS position, ground speed, and track in ForeFlight.  
• **ForeFlight version 13.8 requires iOS 14.0 or later.** |
| 13.7    | August 2021 | • Biasing Climb & Descent profiles by a fixed amount of time or fuel in ForeFlight Performance Profiles.                                 |
# CHANGE HISTORY

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| 13.6    | August 2021 | • Toggleable Obstacle layer depicting buildings, towers, and windmills in Airport 3D View, 3D View Anywhere, 3D Preview, and 3D Review.  
       |         | • Added information about editing track logs by trimming the beginning or end.  
       |         | • Added a setting to display the chart index number Jeppesen Terminal Charts under chart's names in certain views.  
       |         | • Added a switch for Marketing Push Notifications.                                                                                                                                                           |
| 13.5    | June 2021 | • Added ability to insert a hold in the route using the Hold Advisor.  
       |         | • Added Augmented Procedures to quickly find, select, and display minimums for an approach.  
       |         | • Runway Analysis includes graphical visualizations of the ground tracks for many EOPs.                                                                                                                   |
| 13.4    | May 2021 | • Aeronautical Map layer features magenta markers for glider and balloon fields in the U.S.A.  
       |         | • TACAN navaid shown with a specific icon that resembles the VORTAC symbol.  
       |         | • Define Effective and Expiration dates and times in the manifest.json file for Content Packs.  
       |         | • The European section of the Imagery view includes standard and low-level SIGWX charts.                                                                                                                   |
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| 13.3    | April 2021 | • Added Animated Winds layers that show global forecast wind speed, direction, and temperatures at multiple altitudes and times using colored heat maps.  
           • Added Weather layer legends on the Maps page.  
           • Added ForeFlight Labs. Version 13.3 features a Taxi Route keyboard and bubble editor with Performance subscription plans.  
           • Added option that allows Downloading charts and data in the background, while using another app or while the iPad screen is off.  
           • Airport 3D View includes Day/Night modes and realistic Runway Lights.  
           • Added option to import documents into ForeFlight Mobile from the iOS Files app, the Photo library, or Camera.  
           • Support to link Multiple Jeppesen accounts to a single ForeFlight Mobile account. |
| 13.2    | March 2021 | • Added ability to organize Plates Flight Binders by category in a vertical column grouped together and accessible with a single button.  
           • A Flight’s NavLog, Briefing, Flight Plan form, and Runway Analysis Summary, can be saved to a Flight’s Files menu.  
           • Added ability to wirelessly share flight details with Honeywell’s Primus Apex FMS via an Aspen Connected Gateway.  
           • Runway Analysis calculations are available for a certain jets. |
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| 13.1    | February 2021 | • Changed the Maps pop-up to a Maps Sidebar that stays open while interacting with the map.  
• Added ability to rename Documents in the Imported drive that you have directly imported into ForeFlight Mobile.  
• Weather Imagery for locations outside the USA is now consolidated into separate regions: Canada; Europe; South America; Caribbean, Mexico, and Central America; Americas; Atlantic; and Pacific. |
| 13.0    | January 2021 | • Added 2-stage ADS-B Traffic Alerting with yellow or red traffic targets.  
• Procedure Advisor allows you specify a minimum altitude label on the for an IFR approach.  
• Daily/Hourly weather show the forecast quantity of precipitation per hour (if greater than 0.1”) next to the probability of precipitation.  
• Internet Traffic pop-up information for targets include an auto-center button to keep it centered on the Maps page.  
• ForeFlight Version 13.0 and later requires iOS 13.0 or later |